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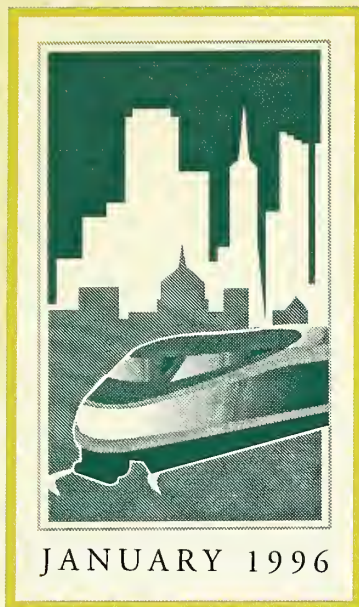
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CALTRAIN SAN FRANCISCO
DOWNTOWN EXTENSION PROJECT
CONCEPTUAL DESIGN AND DRAFT EIS/EIR

Capital Cost Methodology Report

PENINSULA CORRIDOR JOINT POWERS BOARD

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CAPITAL COST METHODOLOGY REPORT

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PREPARED FOR

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PREPARED BY

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January 18, 1996

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1. INTRODUCTION

The Peninsula Corridor Joint Powers Board (JPB) has contracted with ICF Kaiser Engineers, Inc. to provide consulting services for the preparation of conceptual engineering plans, cost estimates, and a Draft Environmental Impact Statement (DEIS)/ Draft Environmental Impact Report (DEIR) for extending passenger train service directly into downtown San Francisco from the present terminus at Fourth and Townsend Streets. The results of this process will be the selection by the JPB of a preferred CalTrain San Francisco Downtown Extension alternative in late 1996.

The *Capital Cost Methodology Report* was issued in draft form on July 28, 1995. This final version is issued after incorporation of client and team comments and is updated to reflect cost estimating work through the two project estimates issued subsequently to the *Draft Capital Cost Methodology Report*. These estimates are the *Rough Order of Magnitude Estimates* issued August 9, 1995 and the *Screening Capital Cost Estimates* issued October 3, 1995. In addition, relevant cost data from subsequent client requested cost estimates for additional design options has been incorporated.

1.1 PROJECT DESCRIPTION

This project features an approximate 1.5-mile extension of the CalTrain commuter rail line from an outlying surface station at Fourth and Townsend streets directly into the heart of the downtown San Francisco central business district.

Two "build" alternatives have been considered to-date in this study. In addition multiple subalternatives or "design options" have also been evaluated and presented to the JPB for decision. The *Design Options Screening Report* dated September 26, 1995 lists those presently submitted for consideration. As a result of the response to the *Design Options Screening Report*, certain alternatives and subalternatives have tentatively been selected for removal from consideration in this study. However, additional subalternatives have now surfaced which will be evaluated prior to the next issue of the cost estimate, planned for May 1996.

The primary focus of this study to date has been the selection of the site for the downtown terminal. Also critical is the trackway alignment for getting to the proposed terminal site. An additional critical issue, related to alignment selection, is the selection of tunneling or cut-and-cover construction methods for the alignment construction. A further issue in this study has been whether or not the existing CalTrain diesel locomotives can be retrofitted for safe and healthy operation in an underground subway and passenger station environment. This study has analyzed and evaluated the feasibility of converting the existing diesel locomotives to "clean diesel" or liquefied natural gas. This study has also evaluated dual mode propulsion as well as full electrification of the entire 78-mile line from San Francisco to San Jose and Gilroy.

1.2 SUMMARY OF ALTERNATIVES

The CalTrain San Francisco Downtown Extension Project (DEIS/DEIR) will evaluate three alternatives. There are two principal "build" alternatives and a baseline "No Build" alternative. Both build alternatives involve underground subway construction in very difficult ground conditions (soft Bay Mud, high water table, seismic zones, etc.) and in a very densely developed urban area (many 20-30 story office and residential buildings adjoin the proposed alignments). The alternatives represent different levels of investment, different levels of service, and different environmental impacts. They include 1) the "No-Build" Alternative with the terminal remaining at its present location at Fourth and Townsend streets; 2) a build alternative with a new subway terminal station at or near Market and Beale Streets in the heart of downtown San Francisco (now eliminated); and 3) a build alternative with a terminal constructed in either a renovated Transbay Terminal (now eliminated) or a new terminal constructed on the site of the existing Transbay Terminal.

Figures 1-1 and 1-2 show the alternative alignments under consideration through the *Screening Capital Cost Estimates*. The *Design Options Screening Report* describes in detail the project alternatives and the *Design Options* presently before the JPB for decision.

1.2.1 No-Build Alternative

The No-Build Alternative is defined to include all those highway and transit facilities that either already exist or are fully funded and committed for construction. It includes the existing and committed (funded) street and highway network and rail and bus transit system. It is a part of all the alternatives.

Since all elements of the No-Build Alternative are planned to be constructed regardless of which alternative is selected, the No-Build Alternative does not contribute to any difference between alternatives and is treated as a zero cost alternative for purposes of the capital cost estimates.

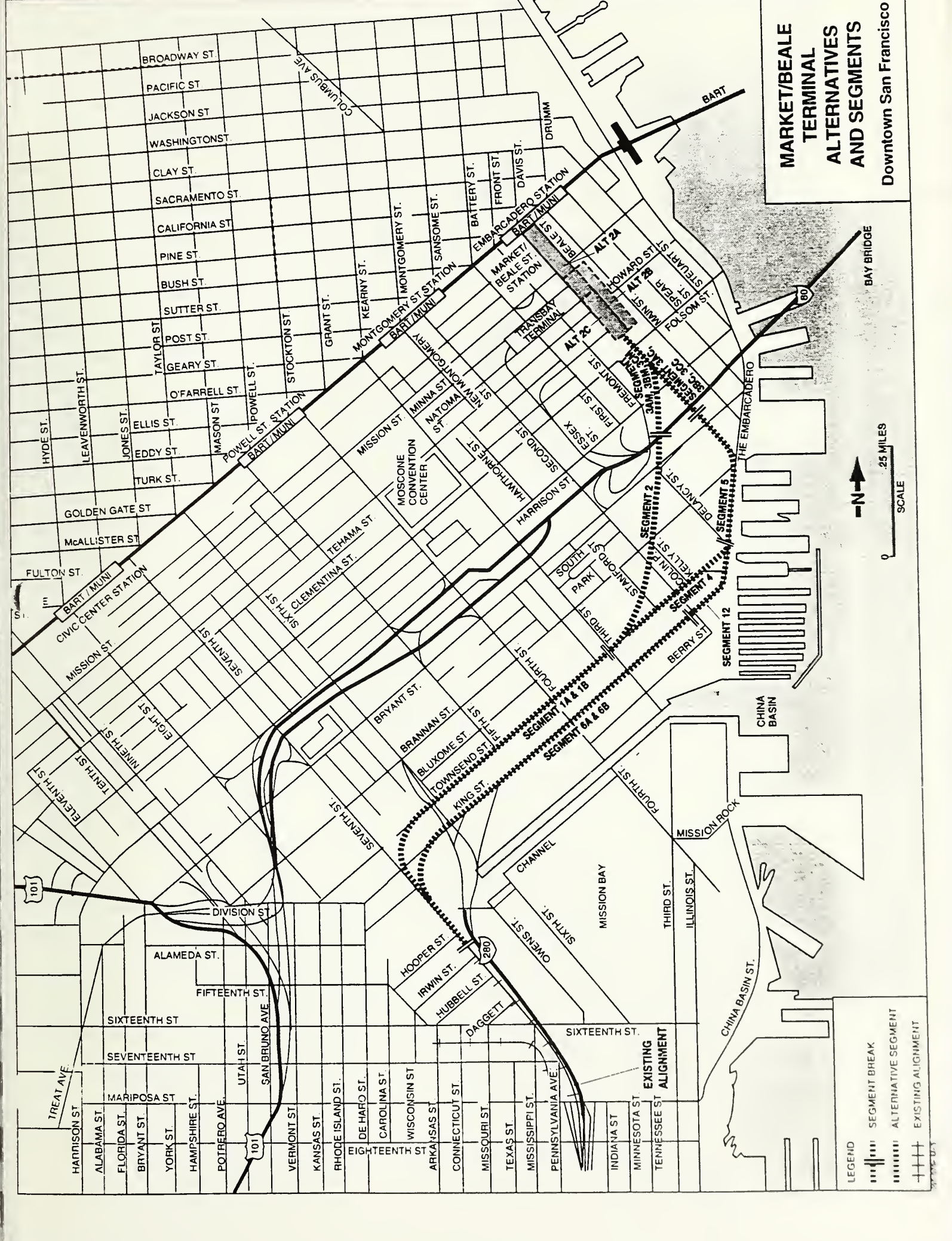
1.2.2 Market/Beale Terminal Alternatives

The Market/Beale Terminal Alternatives would provide a new subway terminal station in Beale Street near or abutting the existing BART/MUNI Metro subway alignment in Market Street. The new passenger rail service would be provided by extending an underground line from the present CalTrain terminal at Fourth and Townsend Streets to the new Market/Beale Terminal.

Three terminal configuration options are under consideration for this alternative. One would terminate in a four track, three-level, stacked, 1000-foot long, underground, stub-end terminal station abutting the existing BART/MUNI Metro subway. The second would terminate in a four track, two-level, underground, stub-end terminal station with staggered 1000-foot long platforms, one of which would abut the existing BART/MUNI Metro subway. The third would terminate in a four track, two-level, underground, stub-end terminal station with 1000-foot long platforms, neither of which would abut the existing BART/MUNI Metro subway as the northern limit of the terminal would be at

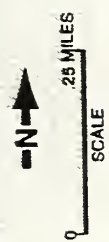
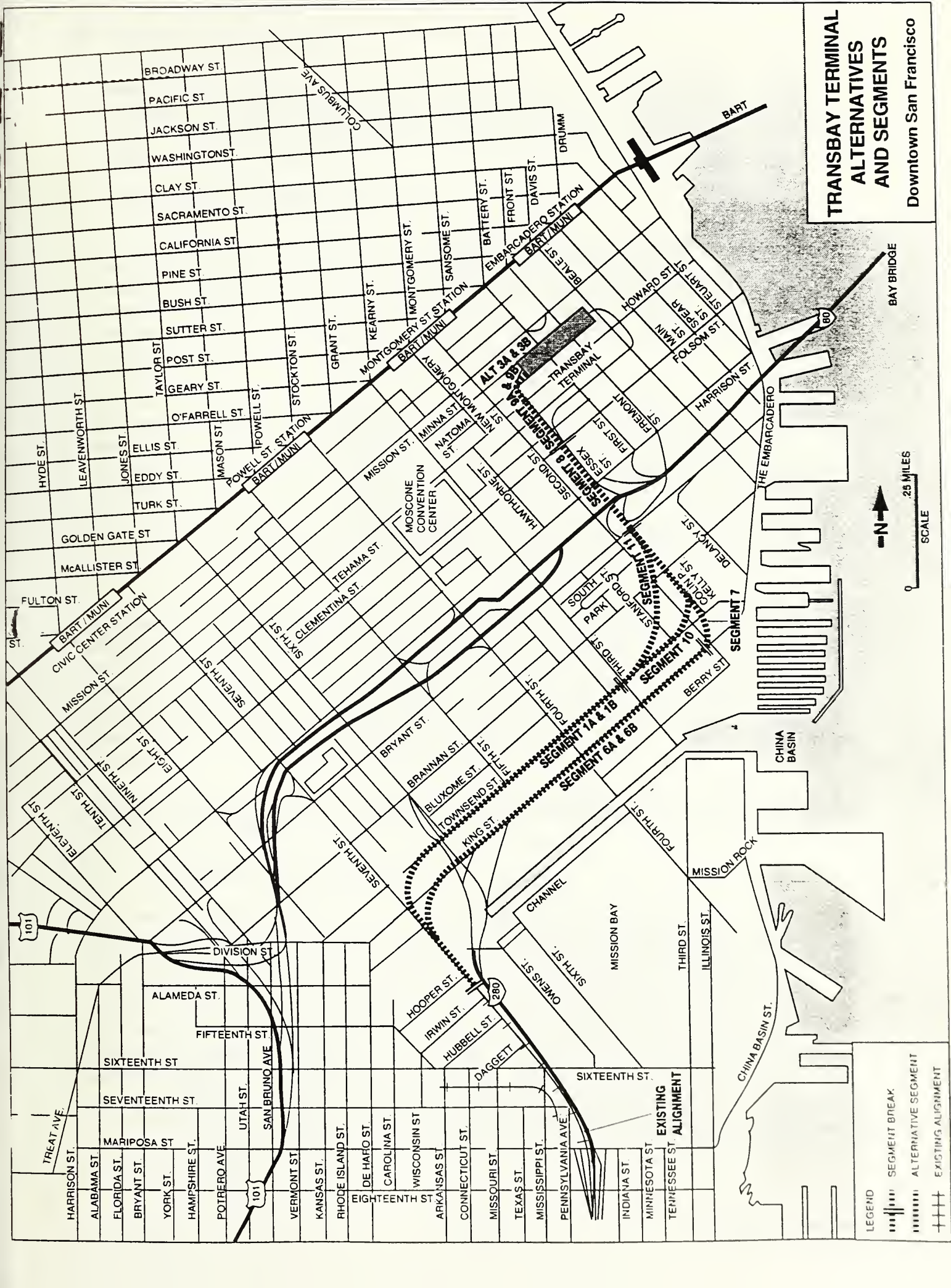
MARKET/BEALE TERMINAL ALTERNATIVES AND SEGMENTS

Downtown San Francisco



TRANSBAY TERMINAL ALTERNATIVES AND SEGMENTS

Downtown San Francisco



- LEGEND
- SEGMENT BREAK
 - ALTERNATIVE SEGMENT
 - +++ EXISTING ALIGNMENT

Mission Street. All would have a connecting mezzanine or underground pedestrian concourse to the BART/Muni Metro Embarcadero subway station. Summary description of each Market/Beale Terminal Alternative studied through the *Design Options Screening Report* is included in Table 1-1.

1.2.3 Transbay Terminal Alternatives

The Transbay Terminal Alternatives would provide a new or modified terminal at the site of the existing Transbay Terminal at Mission and Fremont Streets. This terminal would be provided by extending CalTrain from its present terminal at Fourth and Townsend Streets in an underground alignment for about one mile, and would then surface north of Folsom Street for the aerial terminal options (now eliminated) or continue in cut-and-cover for the below grade options.

To-date three terminal configuration options have been considered for this alternative. One would terminate in a four-track, 1000 foot long, stub-end aerial station on the second floor of the existing Transbay Terminal. A second would be similar in layout but would be new construction replacing the existing Transbay Terminal. The third would terminate in a four track, underground, stub-end terminal station with 1000-foot long platforms. The concourse would be at grade for all three of these design options. As a result of the response to the *Design Options Screening Report*, a subway terminal with six tracks, not four, has tentatively been selected as the preferred option at this site.

The four major bus systems (A-C Transit, SamTrans, Golden Gate Transit, and Greyhound) that presently utilize the second story of the Transbay Terminal would be displaced during construction of these options. A replacement bus terminal would be built either on top of the new underground CalTrain terminal or at a nearby site know as "Main-Beale/Howard". The new terminal would not abut the existing BART/MUNI Metro subway alignment in Market Street and would be 1½ blocks distant (about 900 feet away). A connecting underground pedestrian concourse to the BART/Muni Metro Embarcadero subway station would be provided.

Summary description of each Transbay Terminal Alternative studied through the *Design Options Screening Report* is included in Table 1-2.

1.3 PURPOSE OF THIS REPORT

This report serves to document the methodology and the unit costs used to prepare the capital cost estimates of the various project alternatives and project design options. It is the methodology that was used for preparing the *Rough Order of Magnitude Capital Cost Results Report* issued August 9, 1995 and the *Screening Capital Cost Estimates* issued October 3, 1995. It is the methodology that will be used for future project estimates. For future estimates, changes to the specific unit costs and other items may occur to reflect the changes in the project as it evolves. However the general approach will remain constant. The details of this report are then a snapshot of the cost methodology as it is on January 2, 1996. This report establishes a cost methodology that can be relied upon for reasonable accuracy in comparing alternatives and projecting the capital funding needed to implement the preferred alternative for the CalTrain San Francisco Downtown Extension Project.

DESCRIPTION OF PRIMARY ALTERNATIVES MARKET/BEALE TERMINAL ALTERNATIVES

Alternative Number	Description
2A-CTD	New three-level, stacked, four-track <u>center</u> platform terminal located under Beale Street between Market and Howard Streets. Construction of rail alignment includes surface along Seventh from Berry to Townsend; surface along Townsend to portal at Fourth Street; cut-and-cover along Townsend from Fourth to the Embarcadero; environmentally sensitive cut-and-cover under Embarcadero to Beale; and cut-and-cover along Beale to the Market/Beale terminal. Locomotive propulsion is Clean Diesel.
2A-MTD	New three-level, stacked four-track <u>side</u> platform terminal located under Beale Street between Market and Howard Streets. Construction of rail alignment includes surface along Seventh from Berry to Townsend, surface along Townsend from Seventh to portal at Fourth Street; cut-and-cover along Townsend to Third Street; mined tunnel from Third and Townsend to Folsom and Beale; and cut-and-cover along Beale to the Market/Beale terminal. Locomotive propulsion is Clean Diesel.
2B-CTD	New two-level, four-track center platform staggered terminal located under Beale Street <u>and Caltrans R/W east of Beale</u> between Market and Folsom. Construction of rail alignment includes surface along Seventh Street from Berry to Townsend; surface along Townsend to portal at Fourth Street; cut-and-cover along Townsend from Fourth Street to the Embarcadero; environmentally sensitive cut-and-cover under Embarcadero to Beale; and cut-and-cover along Beale to the Market/Beale terminal. Locomotive propulsion is Clean Diesel.
2B-MTD	New two-level, four-track center platform staggered terminal located under Beale Street <u>and Caltrans R/W east of Beale</u> between Market and Folsom. Construction of rail alignment includes surface along Seventh Street from Berry to Townsend, surface along Townsend from Seventh Street to portal at Fourth Street; cut-and-cover along Townsend to Third; mined tunnel from Third and Townsend to Folsom and Beale; and cut-and-cover along Beale to the Market/Beale terminal. Locomotive propulsion is Clean Diesel.
2C-CTD	New two-level, four-track center platform terminal located under Beale Street <u>and Caltrans R/W east of Beale</u> between Mission and Folsom. Construction of rail alignment includes surface along Seventh Street from Berry to Townsend; surface along Townsend to portal at Fourth Street; cut-and-cover along Townsend from Fourth Street to the Embarcadero; environmentally sensitive cut-and-cover under Embarcadero to Beale; and cut-and-cover along Beale to the Market/Beale terminal. Locomotive propulsion to Clean Diesel.
2C-MTD	New two-level, four-track center platform terminal located under Beale Street <u>and Caltrans R/W east of Beale</u> between Mission and Folsom. Construction of rail alignment includes surface along Seventh Street from Berry to Townsend; surface along Townsend from Seventh Street to portal at Fourth Street; cut-and-cover along Townsend to Third; mined tunnel from Third and Townsend to Folsom and Beale; and cut-and-cover along Beale to the Market/Beale terminal. Locomotive propulsion is Clean Diesel.

Table 1-1

DESCRIPTION OF PRIMARY ALTERNATIVES

TRANSBAY TERMINAL ALTERNATIVES

Alternative Number	Description
3A-CTD	New four-track, center platform Transbay Terminal <u>with above ground train and bus access</u> . Terminal is to be located on the site of the existing terminal. Construction of rail alignment includes surface along Seventh Street from Berry to Townsend, surface along Townsend to portal at Fourth Street, cut-and-cover along Townsend to Colin P. Kelly; cut-and-cover along Colin P. Kelly to Brannan; mined tunnel from Brannan to Folsom and Essex, then portal and begin aerial from Folsom to new Transbay Terminal. Locomotive propulsion is Clean Diesel.
3A-MTD	New four-track, center platform Transbay Terminal <u>with above ground train and bus access</u> . Terminal is to be located on the site of the existing terminal. Construction of rail alignment includes surface along Seventh Street from Berry to Townsend, surface along Townsend to portal at Fourth Street; cut-and-cover along Fourth Street to Third Street; mined tunnel on sweeping curve from Third to Folsom and Essex, then portal and begin aerial from Folsom to new Transbay Terminal. Locomotive propulsion is Clean Diesel.
3B-CTD	New four-track, center platform Transbay Terminal <u>with below ground train access</u> and above ground bus access. Terminal is to be located on the site of the existing terminal. Construction of rail alignment includes surface along Seventh Street from Berry to Townsend, surface along Townsend to portal at Fourth Street, cut-and-cover along Townsend to Colin P. Kelly; cut-and-cover along Colin P. Kelly to Brannan; mined tunnel from Brannan to Folsom and Essex, then cut-and-cover Folsom to new Transbay Terminal. Locomotive propulsion is Clean Diesel.
3B-MTD	New four-track, center platform Transbay Terminal <u>with below ground train access</u> and above ground bus access. Terminal is to be located on the site of the existing terminal. Construction of rail alignment includes surface along Seventh Street from Berry to Townsend, surface along Townsend to portal at Fourth Street; cut-and-cover along Fourth Street to Third Street; mined tunnel on sweeping curve from Third to Folsom and Essex, then cut-and-cover from Folsom to new Transbay Terminal. Locomotive propulsion is Clean Diesel.

This capital cost methodology has been and will be used to estimate the capital costs of facility construction, rolling stock procurement, right-of-way acquisition, etc., and includes appropriate "add-on" costs for engineering design, construction management, project administration, and contingencies. The resulting capital costs will be used in the cost-effectiveness calculations and in preparing projections of cash flow requirements in the financial planning element of the project.

The remainder of this report is organized into chapters following the general order of estimate preparation. These chapters describe the approach used to prepare the capital cost estimates; the establishment of the estimate structure, including the selection of work categories and segmentation of alternatives; the determination of the appropriate unit prices and the sources of data used; the cost estimation of the segments and the system-wide elements; the summarization of the costs into alternatives and design options; and provide guidance for the determination of the contingencies and other "add-on elements" that must be included to provide a complete estimate.

2. APPROACH TO COST ESTIMATES

This chapter describes the approach to the preparation of the capital cost estimates for the CalTrain San Francisco Downtown Extension Project.

2.1 OVERVIEW OF METHODOLOGY

The Federal Transit Administration (FTA) guidance on capital cost estimating is contained in the review draft guidelines *Estimation of Capital Costs* dated September 1990, from the *Procedures and Technical Methods for Transit Project Planning*. In that document, it is suggested that capital cost estimates be prepared using a combination of two procedures:

1. Composite units prices are developed for typical line sections of the trackway and stations for segments of alternatives that can reasonably be analyzed at an aggregate level.
2. Site-specific detailed engineering analysis and costing are prepared for selected work items (usually much shorter sections of the alignment with unusual physical features).

The methodology contained in this report will follow this dualistic approach.

Further to the first procedure, typical section sketches have been prepared for various locations along the trackway. "Typical cost" estimates have been prepared on a build-up approach for the selected typical trackway sections. The result is a cost per lineal foot for each of the selected trackway sections along the alternative alignments.

Alternatively, following the second procedure, the methodology accommodates the case where detailed engineering analysis is deemed to be prudent by providing for detailed cost analysis for site-specific situations. For the San Francisco Downtown Extension Project, examples are:

1. Special reinforcement for the San Francisco anchorage of the Bay Bridge where the Beale Street cut-and-cover subway would pass close by this massive foundation.
2. The San Francisco Downtown Terminal Stations.

For the downtown terminal stations, a separate cost per station for the terminal configurations considered to date has been developed on a site-specific basis.

For the cost elements other than trackway and stations - i.e., *Site Modifications*, *Trackwork*, etc., - "typical cost" estimates have been prepared on a build-up approach or on a guideline allowance basis.

Benefits of this methodology include:

- Significant cost data is available on a wide range of unit cost items needed for the alternatives from local San Francisco projects and other similar projects nationwide. This cost data is from recent, relevant projects, thereby providing comparability of cost between different projects.
- The number of different segments requiring costing is limited.

Trackway line segment costs do not include the cost for those items which are not suited for evaluation on a segment basis. Items of work in this category are rolling stock, maintenance and storage facilities, and the electrification system for the entire CalTrain line from San Francisco to Gilroy. Separate "system-wide" estimates are prepared for these items of work.

Percentage factors to account for (1) Engineering and Management; (2) Contingency; and (3) Project Reserve are applied to all cost items, with recognition of the potential variability inherent in each item or group of items.

This cost estimating approach accomplishes several objectives:

- Provides the ability to timely consider the cost impact in making various important choices as the project evolves.
- Utilizes a consistent cost basis for all portions of the study.
- Minimizes uncertainty by providing a uniform level of detail for all design options and alternatives through each segment.
- Provides reasonable utility relocation and right-of-way estimates based on sound judgment.
- Ultimately allows for realistic cost assessment of required environmental mitigation measures.
- Provides contingency allowances which will vary with individual line items in accordance with the uncertainty associated with each.

2.2 PROJECT DEFINITION DOCUMENTS

Fundamental to the development of capital cost estimates for trackway construction are plan-and-profile drawings of linear facilities which define the types of construction and indicate the alignments assumed. The alternative station (terminal) configurations are also sketched to portray their basic concepts.

Plan-and-profile conceptual engineering drawings have been prepared for the ten primary alignment alternatives evaluated in the *Design Options Screening Report*. See Tables 1-1 and 1-2 for detailed description of these 10 alternatives. Typical cross-sections of line

and station construction have been prepared at various important points. These are drawn at larger scales sufficient to show detail, and as often as required to define the various operating right-of-way environments, types of route, and station concepts.

These conceptual drawings are included in the booklet, *Conceptual Engineering and Architectural drawings for the CalTrain San Francisco Downtown Extension*, dated October 1995. The trackway typical cost estimates and terminal station estimates were prepared using full size advance copies of these drawings.

In Appendix A, the selected typical sections have been displayed with a system map indicating the location where the section was taken. The displayed sections immediately precede the typical cost development sheet(s) for that section.

It should be noted that the typical cost shown for rock tunneling is based on a multiple drift "top heading and bench" construction approach for a single double-track tunnel. The Underground Construction Advisory Board of Consultants for this project, in their deliberations of July 6, 1995 and September 14, 1995, concluded that the results of the subsurface geotechnical exploration program indicate that the rock is poorer than anticipated and that this conservative tunnel construction method is necessary. The multiple drift scheme for a double-track tunnel was conceptually developed and has been incorporated in this *Capital Cost Methodology Report*.

For the Market/Beale and Transbay Terminal downtown terminal stations, schematic plans, elevations and sections have been prepared. The vertical circulation requirements for passengers is indicated. Drawings have also been prepared for the reconfiguration of the existing Transbay Terminal. While this latter scheme has been dropped from the scope of work, the drawings were prepared to a degree of completion suitable for use for the *Rough Order-of-Magnitude Capital Cost Estimates*.

Other documents prepared by the project team and used in the preparation of this *Capital Cost Methodology Report* are:

1. *Geotechnical Aspects of Design*, July 6, 1995.
2. *Report Following Board of Consultants Meeting*, Board of Consultants, July 11, 1995 and September 14, 1995.
3. Draft Report - *Geotechnical Site Investigation - CalTrain S.F. Downtown Station Relocation*, Volumes I and II, July 17, 1995.
4. *Utilities Inventory and Relocation/Reinforcement Report*, September 1995,
5. *Design Options Screening Report*, September 1995
6. *Geotechnical Engineering Recommendations Report*, December 27, 1995.
7. *Transit Terminal Decision Report*, October 1995
8. Draft Report - *CalTrain/PCS Railroad Electrification System from Gilroy to San Francisco*, October 1995.

In addition to documents prepared by the team, various documents from other related or similar projects have been used for reference in preparation of this *Capital Cost Methodology Report*.

Additional project documentation will be prepared by the project team for the more detailed *Preliminary Capital Cost Estimates* scheduled to be completed in May 1996.

3.0 COST ESTIMATE STRUCTURE

While all steps of estimate preparation are important, the selection of the estimate structure is generally considered the critical foundation for the preparation of a cost estimate. For the capital cost estimates of the CalTrain San Francisco Downtown Extension Project, a matrix breakdown has been selected. The categories of work, termed the *system elements*, are first selected. This is followed by the selection of the area breakdown into *segments*.

3.1 SELECTION OF THE SYSTEM ELEMENTS

Judicious selection of the categories of work to be quantified and priced increases the accuracy of the estimate, makes it more user friendly and promotes estimating efficiency.

In railway construction, the major categories of work - trackway, stations, trackwork, etc. - are often termed *system elements*. These items are generally standardized, with some variations, throughout the industry. While there is little opportunity to adjust the major categories, the estimator generally has freedom to select the *sub-elements*. See Table 3-1, *Cost Item List*. The main categories are the *system elements*, the indented items are the *sub-elements*. Note that there are five (5) categories of subway shown (B41-B46), four (4) of which are subcategories of cut-and-cover trackway construction -- but there is only one type of aerial guideway shown (B-20). In this project, cut-and-cover construction is the predominant alignment type, with very little aerial guideway. Consequently, an important distinction to be made is in the types of cut-and-cover construction.

The selection of the significant *sub-elements* for the project is an important election available to the estimator. Judicious selection of the categories of work to be quantified and priced increases the accuracy of the estimate by putting emphasis on project specific distinctions. This in turn makes the estimate more recognizable and user friendly for the client and others. It also promotes estimating efficiency by directing estimating effort to the areas of significant cost for the project.

3.2 SEGMENTATION OF ALTERNATIVES

The segment is the building block; segments should not overlap.

After the alternatives to be evaluated are identified, the next step is to define the *segments*. The *segment* is the basic building block of the cost estimating process for an alternatives analyses. This estimating technique was developed to promote estimating efficiency and accuracy and has been adopted by The Federal Transit Administration's (FTA's) *Estimation of Capital Costs* from the *Procedures and Technical Methods for Transit Project Planning* dated September 1990. Segment definition has major impact on subsequent work on the alternatives analysis; accordingly, careful planning is necessary. Each segment is usually a discrete line section with start/finish points selected for some project-specific purpose.

COST ITEM LIST
=====

Group+Order	Description	Unit
-----	=====	=====
A05	ROUTE LENGTH	RF
A10	TRACK LENGTH	TF
B01	SITE MODIFICATIONS:	
B02	-DEMOLITION	RF
B04	-UTILITY RELOCATIONS/MODIFICATIONS	RF
B08	-STREET AND ROAD MODIFICATIONS	RF
B10	-RAILROAD MODIFICATIONS	LS
B12	-STRUCTURE MODIFICATIONS	LS
B14	-UNDERPINNING	LS
B15	-ENVIRONMENTAL MITIGATIONS	LS
B20	TRACKWAY - AERIAL	RF
B30	TRACKWAY - AT GRADE	RF
B31	TRACKWAY - RETAINED CUT	RF
B40	SUBWAY:	RF
B41	-CUT AND COVER (SPTC WALLS), 2-TRACK	RF
B42	-CUT AND COVER (SPTC WALLS), 4-TRACK	RF
B43	-CUT AND COVER (SOIL-CEMENT WALLS)	RF
B45	-CUT AND COVER (MESH/ROCK BOLTS)	RF
B46	-MINED TUNNEL & SPECIAL CONSTRUCTION	RF
B51	TERMINAL - STRUCT/FINISH, APPROX. 1,100'	EA
B56	AT GRADE STATION, 2 15'x850' SIDE PLATF	EA
B64	TRACKWORK - BALLASTED	TF
B65	TRACKWORK - DIRECT FIXATION	TF
B68	SPECIAL TRACKWORK, TURNOUTS, ETC.	LS
B71	TRACTION POWER SYSTEM (SYS WIDE)	EA
B74	SIGNALING - WAYSIDE AND STATION	LS
B78	COMMUNICATIONS (SYSTEM WIDE)	TF
B94	YARDS & SHOPS (SYSTEM WIDE)	EA
B95	ROLLING STOCK (SYSTEM WIDE)	EA
B96	LOCOMOTIVE CONVERSION/UPGRADE (SYS WIDE)	EA
B97	DIESEL LOCOMOTIVE SALVAGE	EA
B98	PARK & RIDE LOTS & ACCESS IMPROVEMENTS	SP
C00	RIGHT OF WAY & RELOCATION	EA
C04	ENGINEERING & MANAGEMENT	
D00	CONTINGENCY	
E00	ESCALATION (NOT INCLUDED)	
F00	PROJECT RESERVE	

Table 3-1

General rules for defining segments are:

1. Provide a segment boundary where a single alignment diverges into two or more route options.
2. Provide a segment boundary where a single alignment diverges into two or more vertical profile options.
3. Provide a segment boundary where a political or other demarcation will later require a cost boundary.
4. If there is a reasonable probability that an identifiable new option will be added to the analysis, then provide a segment boundary at the expected point of divergence of the new option from the original schemes.

Figures 1-1 and 1-2 are maps showing the alternatives with their component segments. Note that the segment boundaries tend to be placed where there is an alignment choice. For example, Figure 1-1 shows a segment boundary on Townsend near Third Street where Segment 2 and Segment 4 offer alternative routes to reach the Market/Beale Street Terminal Station. This follows the first rule above which has the general effect that any particular route section is only a part of one segment. The estimator should strive not to violate this rule. To avoid distortion and for a fair evaluation of alternatives, it is essential that for the same exact reach of line, the same exact cost is always applied. When a particular route section is part of two or more segments, it is very difficult to ensure consistent pricing.

Table 3-2 is the *Segment Definition Table*. The exact stationing defining the boundaries of each Segment is shown here. This stationing comes from the plan-and-profile drawings. Table 3-3 is the *Segment Composition of Alternatives*. This table lists the alternatives and indicates which segment applies to which alternative. The alternative code designation system is explained at the bottom of Table 3-3.

Note that Tables 3-2 and 3-3 contain *Systemwide Segments*, SW1, etc. These are cost accounts that do not fit conveniently into linear segmentation of the alignments. Included are items such as storage yards, locomotives, and rail cars that relate to the various alternatives in their entirety.



CALTRAIN DOWNTOWN EXTENSION
SAN FRANCISCO, CALIF.

SEGMENT DEFINITION TABLE

09/27/95
BY BCC/RLM

SEGMENT DESCRIPTION	SEGMENT NUMBER	STARTING STATION	ENDING STATION	TURNOUTS	ROUTE FEET (RF)	TRACK FEET (TF)
APPROX. IRWIN & SEVENTH TO APPROX. THIRD & TOWNSEND VIA CUT-AND-COVER CONSTRUCTION. PORTAL ON TOWNSEND BETWEEN FIFTH AND FOURTH.	1A	130+00	169+50	4	3,950'	8,700'
APPROX. IRWIN & SEVENTH TO APPROX. THIRD & TOWNSEND VIA CUT-AND-COVER CONSTRUCTION. PORTAL ON SEVENTH NEAR BERRY.	1B	121+70	169+50	4	4,780'	10,360'
APPROX. THIRD & TOWNSEND TO BRYANT VIA MINED TUNNEL CONSTRUCTION.	2	169+50	196+70	0	2,720'	5,440'
APPROX. BEALE AND BRYANT TO A THREE LEVEL CENTER PLATFORM UNDERGROUND (CUT- AND - COVER) TERMINAL AT MARKET/BEALE.	3AC	200+81	236+40	8	3,559'	15,836'
APPROX. BRYANT TO A THREE LEVEL SIDE PLATFORM UNDERGROUND (CUT-AND-COVER) TERMINAL AT MARKET/BEALE.	3AM	196+70	227+00	8	3,030'	13,560'
APPROX. BEALE AND BRYANT TO A TWO LEVEL CENTER PLATFORM UNDERGROUND (CUT- AND - COVER) STAGGERED TERMINAL AT MARKET/BEALE.	3BC	200+81 197+54 STA 206+50 BK = 197+54 AHD	206+50 227+00	4	3,515'	10,230'
APPROX. BRYANT ST. TO A TWO LEVEL CENTER PLATFORM UNDERGROUND (CUT-AND-COVER) STAGGERED TERMINAL AT MARKET/BEALE.	3BM	196+70	227+00	4	3,030'	10,060'
APPROX. BEALE AND BRYANT TO A TWO LEVEL CENTER PLATFORM UNDERGROUND (CUT- AND - COVER) TERMINAL BETWEEN MISSION AND FOLSOM.	3CC	200+81 197+54 STA 206+50 BK = 197+54 AHD	206+50 220+90	4	2,945'	9,790'
APPROX. BRYANT ST. TO A TWO LEVEL CENTER PLATFORM UNDERGROUND (CUT-AND-COVER) TERMINAL BETWEEN MISSION AND FOLSOM.	3CM	196+70	220+90	4	2,420'	8,820'
APPROX. THIRD AND TOWNSEND TO DELANCY AND TOWNSEND, VIA CUT-AND-COVER CONSTRUCTION.	4	169+50	187+80	0	1,830'	4,460'

Table 3-2



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CALTRAIN DOWNTOWN EXTENSION
SAN FRANCISCO, CALIF.

SEGMENT DEFINITION TABLE

09/27/95
BY BCC/RLM

SEGMENT DESCRIPTION	SEGMENT NUMBER	STARTING STATION	ENDING STATION	TURNOUTS	ROUTE FEET (RF)	TRACK FEET (TF)
APPROX. DELANCEY AND EMBARCADERO TO BRYANT AND BEALE, VIA CUT-AND-COVER UNDER THE EMBARCADERO	5	187+80	200+81	0	1,301'	2,602'
APPROX. IRWIN & SEVENTH TO APPROX. SECOND & KING VIA CUT-AND-COVER CONSTRUCTION. PORTAL ON KING 400' EAST OF SIXTH ST.	6A	122+55	175+00	4	5,245'	11,290'
APPROX. IRWIN & SEVENTH TO APPROX. 2ND & KING VIA CUT-AND-COVER CONSTRUCTION. PORTAL ON SEVENTH NEAR BERRY.	6B	121+70	175+00	4	5,330'	11,460'
SECOND & KING TO BRYANT & COLIN P. KELLY, VIA COLIN P. KELLY	7	175+00	193+85	0	1,885'	3,770'
BRYANT & COLIN P. KELLY TO FOLSOM PORTAL, VIA MINED TUNNEL CONSTRUCTION.	8	193+85	204+50	0	1,065'	2,130'
FOLSOM PORTAL, AERIAL TO NEW AERIAL TERMINAL ON TRANSBAY SITE	9A	204+50	228+55	6	2,405'	8,550'
FOLSOM TO NEW UNDERGROUND TERMINAL- ON TRANSBAY SITE	9B	204+50	228+55	6	2,405'	8,550'
APPROX. THIRD & TOWNSEND TO BRYANT & COLIN P. KELLY, VIA SHORT RADIUS TURN.	10	169+50 178+65 STA 178+10 BK = 178+75 AHD	178+10 193+85	0	2,380'	4,760'
APPROX. THIRD & TOWNSEND TO BRYANT & COLIN P. KELLY, VIA LONG RADIUS TURN.	11	169+50 STA 190+98 BK = 193+85 AHD	190+98 193+85 AHD	0	2,148'	4,296'
KING AND 2ND TO APPROX. DELANCEY AND THE EMBARCADERO VIA CUT-AND-COVER.	12	175+00 STA 184+88 BK = 187+80 AHD	184+88 187+80 AHD	0	1,208'	2,416'
TRACTION POWER (DWTN SAN FRANCISCO TO GILROY)	SW1	N/A	N/A	N/A	N/A	N/A



**CALTRAIN DOWNTOWN EXTENSION
SAN FRANCISCO, CALIF.
SEGMENT DEFINITION TABLE**

09/27/95
BY BCC/RLM

SEGMENT DESCRIPTION	SEGMENT NUMBER	STARTING STATION	ENDING STATION	TURNOUTS	ROUTE FEET (RF)	TRACK FEET (TF)
TRACTION POWER (DWTN SAN FRANCISCO TO IRWIN)	SW2	N/A	N/A	N/A	N/A	N/A
SATELLITE STORAGE YARD (16TH STREET / I-280)	SW3	N/A	N/A	N/A	N/A	12,060'
SATELLITE STORAGE YARD (BAYSHORE IN BRISBANE)	SW4	N/A	N/A	N/A	N/A	13974'
PULLMAN WAY, SAN JOSE L.N.G. FUELING FACILITY	SW5	N/A	N/A	N/A	N/A	N/A
NEW ELECTRIC LOCOMOTIVES	SW6	N/A	N/A	N/A	N/A	N/A
NEW DUAL - MODE LOCOMOTIVES	SW7	N/A	N/A	N/A	N/A	N/A
DIESEL LOCOMOTIVE CONVERSION TO L.N.G.	SW8	N/A	N/A	N/A	N/A	N/A
CLEAN DIESEL LOCOMOTIVE UPGRADE	SW9	N/A	N/A	N/A	N/A	N/A
MISC. SYSTEM WIDE LELMENTS	SW10	N/A	N/A	N/A	N/A	N/A

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CALTRAIN DOWNTOWN EXTENSION
SAN FRANCISCO, CALIF.
SEGMENT COMPOSITION OF ALTERNATIVES

09/22/95
BY BCC/RLM

PRIMARY ALTERNATIVES

ALT NO.	ALIGNMENT SEGMENTS												SYSTEMWIDE																		
	1A	1B	2	3AC	3AM	3BC	3BM	3CC	3CM	4	5	6A	6B	7	8	9A	9B	10	11	12	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8	SW9	SW10	
1																															
2A-CTD	X			X						X	X												X						X		X
2A-MTD	X		X		X																		X						X		X
2B-CTD	X					X				X	X												X						X		X
2B-MTD	X		X				X																X						X		X
2C-CTD	X							X		X	X												X						X		X
2C-MTD	X		X						X														X						X		X
3A-CTD	X														X	X	X						X						X		X
3A-MTD	X														X	X	X		X				X						X		X
3B-CTD	X														X	X	X						X						X		X
3B-MTD	X														X	X	X			X			X						X		X

D = DIESEL LOCOMOTIVES, G = LNG LOCOMOTIVES, M = DUAL MODE LOCOMOTIVES, E = ELECTRIC LOCOMOTIVES
 T = TOWNSEND STREET ALIGNMENT, K = KING STREET ALIGNMENT
 C = CUT AND COVER ALIGNMENT, M = MINED TUNNEL ALIGNMENT
 A,B,C = TERMINAL CONFIGURATION OPTIONS
 1 = FOURTH AND TOWNSEND TERMINAL LOCATION (NO BUILD), 2 = MARKET/BEALE TERMINAL LOCATION, 3 = TRANSBAY TERMINAL LOCATION

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4. UNIT PRICES AND SOURCES OF DATA

This chapter presents unit prices in **July 1995 dollars** and data sources from which the unit prices were derived. In order to develop realistic unit prices for San Francisco, actual San Francisco area data was used to the extent available.

Designs and costs from the Muni Metro Turnaround Facility, now under construction, have been used as a prime reference. The proximity of this project and the requirements for similar construction methods have made this project a superior and convenient reference. The contract documents including the completed bid form have been obtained.

A report entitled *CalTrain Extension to Financial District* prepared for the *Peninsula Mass Transit Study* (1984), an earlier version of this project, addressed the local conditions. This report has also provided much valuable information.

To supplement this data, selected current San Francisco area material quotations and applicable current craft labor rates have been obtained. The labor rates are contained in Appendix C. Fringe benefits, payroll taxes and insurance have been added to the base craft rates. Quotes for certain specialty items such as jet grouting have been solicited from out-of-state sources.

For cost items where local information was unavailable, recent experience from other projects has been used for reference. The Los Angeles County's Red Line transit subway project, also currently under construction, has been a source of considerable information. Other projects relied on are the Honolulu Rapid Transit Project; South Sacramento Corridor Project; Baltimore Metro's Northeast Corridor Extension; Seattle Metro's Regional Transit Project; Santa Clara County's Guadalupe Corridor Line; Pittsburgh's South Hills Line; Los Angeles County's Blue Line; and Portland's Banfield Line.

4.1 UNIT COST LIBRARY

An early task in developing costs for the project was to prepare a list of work items and their costs, or a "unit cost library". The selection of items considered the specific features of the project. Appendix B is the Unit Cost Library developed for this project. All items include labor, burden, construction equipment usage, materials, permanent equipment, and contractor's overhead and profit. These items have been developed generally by either pricing up the elements of work or by obtaining data from other similar projects. For this project, the structural items contain the bulk of the costs and accordingly form the heart of the library.

The unit prices will continue to be refined by the project team as the planning and engineering process proceeds. In particular, they will be updated as necessary when the *Preliminary Capital Cost Report* is prepared.

4.2 SELECTION OF THE TYPICAL SECTIONS FOR COSTING

Reviewing the project, typical sections for costing are selected for important system elements. Usually the most common or the average section is selected.

The basic tool for pricing the trackway alternatives is the typical or "composite" cost by system element. For the San Francisco Downtown Extension Project DEIS/DEIR, selected *typical sections* were prepared and costed for this methodology in advance of the actual cost estimate preparation. Utility relocation and protection, architectural construction and right-of way acquisition present special pricing problems and are discussed individually in this report.

For this project, trackway construction (i.e., the subway, at grade or aerial trackway construction - excluding the *trackwork* itself) is the largest single cost item and in the *Screening Capital Cost Estimates* trackway construction averages at 40%+ of the total construction cost. Accordingly, for the accuracy of the estimate, typical sections for costing need to be carefully selected for the predominant trackway types for the project. The terminal station is a major cost item as well, and is the second largest cost item for this project, averaging about 25% of the construction cost (These rankings are for the diesel locomotive option and are reduced when the electrification option is selected). As the bulk of project construction cost is expected to be in these two items, (trackway and terminal station), the bulk of the estimating effort is focussed on these two items rather than other system elements, such as trackwork, where the relative cost is much less -- but more precisely known.

Since the typical costs are often factored (See Chapter 5, Cost Estimation, Section 5.1) for each segment to account for the variations present in that segment, the best practice is to select the most common sections for the typical cost. For instance, for mined tunnel trackway construction, a typical section has been taken on a tangent section of line without any unusual features. The special features such as cross passages, vent shafts and portals are addressed by applying a factor to the cost.

It should be recognized that this *Capital Cost Methodology Report* probably will not anticipate all typical sections that will be needed for estimate preparation for this project's remaining estimate, the *Preliminary Capital Cost Estimate*. For that estimate, changes may occur such that it will be necessary to revise the earlier typical sections and costs or prepare altogether new typical sections.

4.3 TYPICAL OR "COMPOSITE" COSTS; SITE-SPECIFIC ESTIMATES

Composite costs are developed for the typical cross-sections selected. Nine (9) typical costs for trackway are presented in Appendix B. Six (6) are for cut-and-cover trackway; one (1) is for mined tunnel trackway; one (1) is for retained cut trackway; and one (1) is the special cut-and-cover construction passing by the toe of the Bay Bridge anchorage.

In addition, nine (9) site specific terminal station estimates are presented in Appendix B. Four (4) are for the Market/Beale Terminal Station - one for side platform configuration, and three for center platform configuration. Three (3) are for the Transbay Terminal

Station in subway configuration - one for a four-track center platform configuration, one for a six-track center platform configuration and the other for a six-track center platform configuration, structural shell only without finish work. Two (2) are for a Mission Bay Station in subway configuration - one for a two-track side platform configuration, and the other for a two-track side platform configuration, structural shell only without finish work.

Table 4-1, *Unit Prices for System Elements*, summarizes the composite and other unit prices to be used for the project alternatives. The source column of this table indicates the source of the unit prices for the various system elements.

<p align="center">TABLE 4-1 UNIT PRICES FOR SYSTEM ELEMENTS</p>		
Element	Unit Price	Source
SITE MODIFICATIONS: - Demolition - Utility relocation - Street Modifications - Railroad modifications - Structure Modifications - Underpinning - Environmental Mitigations	Variable: \$0-100/RF Variable: \$0-3000/RF Variable: \$0-300/RF Variable: \$0-200/TF Lump Sum Lump Sum Lump Sum	Allowance based on site review Developed Cost, (Case by Case) Developed Cost, (Case by Case) Allowance based on site review Developed Cost (Case by Case) Developed Cost (Case by Case) Developed Cost (Case by Case)
TRACKWAY: - Aerial - At Grade - 256 Retained Cut - 243 Cut and Cover, 2Trk (Soil Cement Wall) - 244 Cut and Cover, 2Trk (Mesh/Rock Bolts) - 245 Cut and Cover, 2Trk (SPTC Walls) - 246 Cut and Cover, 2 Cell, 4Trk (SPTC Walls) - 247 Cut and Cover, 3 Cell, 4Trk (SPTC Walls) - 248 Cut and Cover, 2Trk Spread(Mesh/Rock Bolts) - 251 Mined Tunnel (Double Track) - 291 Special @ Bay Bridge, Cut & Cover, 3 Cell, 4Trk	\$8000/Route Foot \$100/Route Foot \$9,483/Route Foot \$19,071/Route Foot \$17,189/Route Foot \$33,015/Route Foot \$52,505/Route Foot \$63,122/Route Foot \$30,155/Route Foot \$25,686/Route Foot \$120,290/Route Foot	Allowance Allowance Developed Cost (See Appendix B) Developed Cost (See Appendix B) Developed Cost (See Appendix B) Developed Cost (See Appendix B) Developed Cost (See Appendix B) Developed Cost (See Appendix B) Developed Cost (See Appendix B) Developed Cost (See Appendix B) Developed Cost (See Appendix B)
STATIONS: SUBWAY - 320 Market/Beale - Side Platform, Stacked, 4 track - 321 Market/Beale - Center Platform, Stacked, 4 track - 322 Market/Beale - Center Plat, Staggered, 4 track - 323 Mission/Beale - Center Platform, 4 track - 326 Transbay Terminal - Center Platform, 4 track - 327 Transbay Terminal - Center Platform, 6 track - 328 Transbay Terminal - Center Platform, 6 track, Shell - 331 Mission Bay - Side Platform, 2 track - 332 Mission Bay - Side Platform, 2 track, Shell	\$117,070,000/Sta \$115,280,000/Sta \$99,266,000/Sta \$95,197,000/Sta \$83,930,000/Sta \$98,319,000/Sta \$65,240,000/Sta \$49,791,000/Sta \$34,441,000/Sta	Developed Cost (See Appendix B) Developed Cost (See Appendix B) Developed Cost (See Appendix B) Developed Cost (See Appendix B) Developed Cost (See Appendix B) Developed Cost (See Appendix B) Developed Cost (See Appendix B) Developed Cost (See Appendix B) Developed Cost (See Appendix B)
TRACKWORK: - Ballasted - Ballasted, reusing existing rail - Direct Fixation - Special Trackwork, Turnouts, Etc.	\$155/TF \$132/TF \$230/TF Lump Sum	Seattle RTP Developed Cost Developed Cost Developed Cost (Case by Case)
TRACTION POWER SUPPLY - Overhead Catenary System - Substation	\$/STM \$/EA	*
SIGNALING	\$/TF	*
COMMUNICATIONS	\$/TF	*

* These items estimated on systemwide basis. See Table 4-2

These composite costs are expected to cover the bulk of the trackway and station cost for the various alternatives. As indicated herein, the need for additional composite sections may arise for the *Preliminary Capital Cost Estimate*. At that time, they will be prepared and included in that estimate.

4.4 ARCHITECTURAL WORK - PRICING METHODS

The level of quality of Architectural finishes for the CALTRAIN terminal station has been assumed to be roughly equivalent to that of a downtown San Francisco BART station. The level of quality and the architectural guidelines prepared for this project indicate a budget range of materials which may be utilized for the terminal station and unit costs have been established accordingly.

The primary architectural components estimated may include some or all of the following items:

- Vertical circulation elements: elevators; escalators; stairs
- Architectural finishes: floors (tile, concrete finishes, elastomeric coating, vinyl flooring); walls (gypsum board, paint, tile, concrete finishes, aluminum or stainless steel; ceilings (gypsum board, acoustical tile)
- Signage and graphics
- Amenities: benches; ticketing; drinking fountains
- Lighting: emergency; security; code-required; general station lighting
- Station support spaces: offices; toilets
- Other architectural elements: railings; gates; weather coverings

To establish unit or square footage costs, the following resources have been utilized:

- Means Interior Cost Data (the most recent edition).
- LSI (Lee Saylor, Inc.) Current Construction Costs (the most recent edition).
- Direct contact with manufacturers and suppliers.
- Team experience with new construction and renovation of other facilities.

4.5 RIGHT-OF-WAY- PRICING METHODS

The methodology for estimating the cost of land acquisition presupposes that the Joint Powers Board (JPB) will pay fair market value for the land and improvements belonging to the existing landowners. Market value will be estimated based upon the *Sales Comparison Approach*, which is the most typical appraisal approach for valuing land. The *Sales Comparison Approach* estimates the value of a property (referred to as the "subject property") by analyzing recent sales of comparable properties in the immediate area and adjusting the "comparable sales" to arrive at a value indication for the subject property. Only recent land sales near downtown San Francisco have been utilized for this analysis. However, as very few land parcels have transacted recently in or near downtown San Francisco, alternative sources of market information have also been utilized. It should be noted that the land acquisition process will necessitate acquiring existing building

structures. The *Sales Comparison Approach* has been utilized to estimate a market value for the acquisition of these buildings.

The cost of acquiring the permanent and temporary easements necessary for the construction and operation of the CalTrain extension has been estimated using two approaches. First, research was conducted regarding any other permanent or temporary easements which have been acquired in San Francisco. Second, other cities and transit-related entities were surveyed to determine the cost of acquiring similar easements. Examples of these entities include BART, LACMTA, MUNI, the Municipality of Metropolitan Seattle, and Portland's TRI-MET.

4.6 SYSTEM-WIDE ELEMENTS

This section describes the system-wide elements that must be considered in preparing the capital cost estimates for the CalTrain San Francisco Downtown Extension Project. Included in this category are the costs of the traction power system, signaling, communications, the yards and shops, including both the 16th Street and Owens satellite yard and the fueling facility at the Pullman Way Yard in San Jose, park and ride lots at the Peninsula stations, new electric and diesel/LNG locomotives, and new gallery passenger cars. All other construction and equipment items are evaluated within the alignment segments.

Prices for system-wide elements for the alternatives are presented in Table 4-2. The sources of the prices are noted in this table.

TABLE 4-2 UNIT PRICES FOR SYSTEM-WIDE ELEMENTS		
Element	Price ¹	Source
TRACTION POWER SYSTEM		
-OCS System	\$LS	Developed cost, See Screening Estimate
-Substations	\$LS	Developed cost, See Screening Estimate
SIGNALING	\$LS	Developed cost, See Screening Estimate
COMMUNICATIONS	\$LS	Developed cost, See Screening Estimate
YARDS AND SHOPS, 16th Street	\$3,702,000/EA	Developed cost, See Screening Estimate
LOCOMOTIVES		
- Electric, 25 kV AC	\$3,500,000/EA	Allowance, new quote will be obtained
- Dual-Mode, 25 kV AC	\$7,000,000/EA	Allowance, new quote will be obtained
GALLERY CARS	\$1,800,000/EA	Allowance, new quote will be obtained
PARK AND RIDE LOTS	\$/Space	To be determined

Note: 1. All prices are in mid-1995 dollars.

5. COST ESTIMATION

5.1 COST ESTIMATION OF SEGMENTS

After segmentation of the alternatives is completed, reasonable cost estimates are prepared for each identified segment. Table 5-1 is the estimate for Segment 9B, Transbay Terminal, Subway Station, 4-Track.

First, the project typical unit costs are pre-set in the computer estimating system. Quantities of each of the items of the selected Work Breakdown Structure (WBS), termed "system elements", are then determined for the segment. Ideally, at the time of the actual estimate preparation, the quantities of each system element for each segment would be determined and multiplied by the typical cost for that system element and pricing would be complete. While this may work for some parts of the project, the typical cost will generally not be the average cost. The actual conditions within each segment must be reviewed to determine whether the typical unit costs are appropriate or need be adjusted. When indicated, the typical prices are adjusted by means of a factor to consider the site-specific conditions. For instance, in Table 5-1, cut and cover construction has been judged to be 8 % more costly than the pre-set typical value of \$17,189 per route foot and a factor of 1.08 is multiplied by the pre-set typical value. This increase is introduced to cover the additional cost for extra "environmentally sensitive" treatment and to cover ventilation costs. The estimator's professional judgement is of course the key element in setting the appropriate factor.

5.2 UTILITY RELOCATIONS

Evaluation of the cost of utility relocations is often a significant problem for a design study such as this. This is because in the early stages of a project: 1) little research is devoted to identifying the impacted utilities; and 2) after identification, little effort is devoted to conceptual layout and design of the treatment (relocation, support or abandonment) of the affected utility. Compounding this problem is the very large variations in cost of utility work, which results from the specific details for the impacted utilities.

For this project, a detailed inventory of the utilities has been prepared by gathering the appropriate maps from the City of San Francisco and private utility companies. A site visit to the proposed alignments by the utility estimator has been undertaken with observations made on conditions expecting to impact cost.

A systematic approach has been followed for developing the utility cost estimates. The major utility systems were inventoried and catalogued by segment. The utilities that will be impacted were listed on a worksheet showing the utility system, size, limits, and assumed disposition. The impacts have been classified as replace, support in place or abandon. Quantities were taken off and summarized by segment. Utilizing the unit costs established for this project, utility cost was estimated for each segment. Major utility cost items — large diameter sewers for example — have been specifically evaluated.

SEGMENT: 9B - TRANSBAY T'RML S'WAY STA 4TRK

DESCRIPTION	UNIT	QTY	UNIT COST	FACTOR	TOTAL (\$000)
SYSTEM DATA					
ROUTE LENGTH	RF	2405.0		1.00	
TRACK LENGTH	TF	8550.0		1.00	
CONSTRUCTION COSTS					
SITE MODIFICATIONS:					
-DEMOLITION	RF	1.0	7762334	1.00	7762
-UTILITY RELOCATIONS/MODIFICATIONS	RF	2405.0	771	1.00	1854
-STREET AND ROAD MODIFICATIONS	RF	2405.0	100	1.00	241
-RAILROAD MODIFICATIONS	LS			1.00	
-STRUCTURE MODIFICATIONS	LS			1.00	
-UNDERPINNING	LS	1.0		1.00	
-ENVIRONMENTAL MITIGATIONS	LS	1.0	2790000	1.00	2790
TRACKWAY - AERIAL	RF			0.90	
TRACKWAY - AT GRADE	RF				
TRACKWAY - RETAINED CUT	RF			1.00	
SUBWAY:	RF				
-CUT AND COVER (SPTC WALLS), 2-TRACK	RF			1.00	
-CUT AND COVER (SPTC WALLS), 4-TRACK	RF			1.00	
-CUT AND COVER (SOIL-CEMENT WALLS)	RF			1.00	
-CUT AND COVER (MESH/ROCK BOLTS)	RF	870.0	17189	1.08	16151
-MINED TUNNEL & SPECIAL CONSTRUCTION	RF	350.0	25686	1.03	9260
TERMINAL - STRUCT/FINISH, APPROX. 1,100'	EA	1.0	83930125	1.00	83930
TRACKWORK - BALLASTED	TF			1.00	
TRACKWORK - DIRECT FIXATION	TF	8550.0	230	1.00	1967
SPECIAL TRACKWORK, TURNOUTS, ETC.	LS	1.0	410000	1.00	410
TRACTION POWER SYSTEM (SYS WIDE)	EA			1.00	
SIGNALING - WAYSIDE AND STATION	LS			1.50	
COMMUNICATIONS (SYSTEM WIDE)	TF			1.00	
YARDS & SHOPS (SYSTEM WIDE)	EA				
ROLLING STOCK (SYSTEM WIDE)	EA				
LOCOMOTIVE CONVERSION/UPGRADE (SYS WIDE)	EA				
DIESEL LOCOMOTIVE SALVAGE	EA				
PARK & RIDE LOTS & ACCESS IMPROVEMENTS	SP				
Subtotal CONSTRUCTION COSTS :					\$124365
NON-CONSTRUCTION COSTS					
RIGHT OF WAY & RELOCATION	EA	1.0	4500000	1.00	4500
ENGINEERING & MANAGEMENT				1.00	32560
Subtotal NON-CONSTRUCTION COSTS :					\$37060
CONTINGENCY					
CONTINGENCY				1.00	43539
ESCALATION					
ESCALATION (NOT INCLUDED)				1.00	
PROJECT RESERVE					
PROJECT RESERVE				1.00	16397
TOTAL :					\$221361

Table 3-1

5.3 ARCHITECTURAL WORK

For the architectural components of the several alternative terminal stations estimated, a two-step approach was followed for developing the estimates. For the *Rough Order of Magnitude Estimates* a lump sum allowance for the major architectural elements was prepared. The lump sum allowances were determined based on the number of elements (escalators, as an example) or as a general allocation (architectural finishes, for example).

For the architectural components of the subsequent *Design Options Screening Capital Cost Estimates* of the several alternative terminal stations, a conceptual station layout for each alternative was prepared. For the refined station layouts and considering refined program requirements for the stations, a more detailed list of architectural elements was prepared and unit-cost or square footage cost take-offs assigned to each element. Using these take-offs, the *Screening Capital Cost Estimates* were prepared.

5.4 RIGHT-OF-WAY

Evaluation of cost of right-of way is frequently a problem in conceptual design studies such as this because research is often postponed until more definitive design information is available. For the estimates for this project, cost estimates were prepared for acquiring the land and easements necessary for the extension of the CalTrain system for all of the downtown extension alternatives and options. Based on a review of conditions along the alignment, four basic types of right-of-way acquisition cost have been identified.

- ▶ Fee title to land (generally where the train will run at grade);
- ▶ Permanent underground easements (where the train will run underground);
- ▶ Temporary construction easements (where the train will run underground and "cut and cover" construction techniques will be utilized); and
- ▶ Temporary underground easements (where "tie-backs" or rock anchors are utilized). These are considered temporary easements, as property owners may remove the tie-backs or rock anchors after construction is completed.

Working with the comparable sales information (see Chapter 4), right-of-way costs generally were evaluated by the following process:

1. Using county assessor's maps, existing property lines were marked on plan/profile sheets showing the alignment.
2. A field site survey was conducted to assist in the selection of the applicable cost designation for the various property takes along the alignment.
3. The various property takes along the alignment were aggregated by combining the areas of each pre-selected pricing type.

4. Estimated purchase price by type was determined by multiplying the appropriate typical price per square foot by the area of right-of-way to be taken.
5. Most permanent subsurface easements were priced on a nominal basis per property.
6. The temporary construction easements for tiebacks were estimated on a cost per tieback times the number of tiebacks.
7. Severance damages were added if appropriate. Severance is related to diminished property utility as a result of separating the property into two or more parts. (Severance may amount to the full value of the original parcel for partial takes).

Summary valuations were developed for the discrete route segments established for this project. These segment totals were then brought forward to the segment estimate sheets. See Table 5-1 which indicates that right-of-way cost is brought forward as a lump sum.

It is assumed that the extent of the temporary surface construction easements for cut-and-cover construction will be based solely on the width of the excavation.

Building owners or tenants physically displaced by the project are entitled by law to "relocation" payments. The "relocation costs" have been estimated on an allowance basis relying on team experience on other projects. These costs have been added to the cost of purchase of fee title and easements.

5.5 COST ESTIMATION OF ALTERNATIVES

The capital cost estimate for each alternative consists of segment-specific costs and system-wide elements. "Add-on" factors, generally on a percentage basis, have been applied to the specific segment costs and system-wide elements as required. Add-ons are discussed in Chapter 6.

Each alternative is estimated by aggregation of the appropriate segments. Table 5-2 is an example of an alternative estimate. It is the estimate for project Alternative 3B-MTD, the Transbay Terminal alternative with the longer mined tunnel alignment. In addition to line segments, a typical alternative will have "systemwide" (SW) elements. The "SW" segments in Table 5-2 indicate inclusion of systemwide elements in the alternative.

5.6 COMPARISON OF ALTERNATIVES

For easy comparison, the various alternatives and design options being evaluated are displayed side-by-side. Table 5-3 is an example of the *Alternative Comparison* for the Transbay Terminal Alternatives.

ALTERNATIVE: 3B MTD - TTT - BELOW GND - MINED - DIESEL LOCOMOTIVES

DESCRIPTION	UNIT	SEG.: 1A	SEG.: 8	SEG.: 9B	SEG.: 11	SEG.: S43	SEG.: S49	SEG.: S410	QTY	COST	QTY	COST	TOTALS	QTY	COST
SYSTEM DATA															
ROUTE LENGTH	RF	3950	0	1065	0	2148	0	0	0	0	0	0	0	9568	0
TRACK LENGTH	TF	8700	0	2130	0	4296	0	0	0	0	0	0	0	35736	0
CONSTRUCTION COSTS															
SITE MODIFICATIONS:															
-DEMOLITION	RF	3950	395	0	0	0	0	0	0	0	0	0	0	0	0
-UTILITY RELOCATIONS/MODIFICATIONS	RF	3950	8619	1065	7762	0	500	0	0	0	0	0	0	3952	8657
-STREET AND ROAD MODIFICATIONS	RF	3950	494	0	1854	2148	496	1	47	0	0	0	0	9569	11160
-RAILROAD MODIFICATIONS	LS	1	1000	0	0	0	0	0	0	0	0	0	0	6355	735
-STRUCTURE MODIFICATIONS	LS	0	0	0	0	0	0	0	0	0	0	0	0	2	1500
-UNDERPINNING	LS	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-ENVIRONMENTAL MITIGATIONS	LS	1	500	0	1	1000	0	0	0	0	0	0	0	2	1000
TRACKWAY - AERIAL	RF	0	0	0	0	0	0	0	0	0	0	0	0	2	3290
TRACKWAY - AT GRADE	RF	1640	164	0	0	0	0	0	0	0	0	0	0	0	0
TRACKWAY - RETAINED CUT	RF	920	7416	0	0	0	0	0	0	0	0	0	0	1640	164
SUBWAY:	RF	0	0	0	0	0	0	0	0	0	0	0	0	920	7416
-CUT AND COVER (SPIC WALLS), 2-TRACK	RF	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-CUT AND COVER (SPIC WALLS), 4-TRACK	RF	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-CUT AND COVER (SOIL-CEMENT WALLS)	RF	1390	28894	0	0	0	0	0	0	0	0	0	0	1390	28894
-CUT AND COVER (MESH/ROCK BOLTS)	RF	0	0	0	16151	0	0	0	0	0	0	0	0	870	16151
-MINED TUNNEL & SPECIAL CONSTRUCTION	RF	0	0	1065	28176	350	56829	0	0	0	0	0	0	3563	94265
TERMINAL - STRUCT/FINISH, APPROX. 1,100'EA	EA	0	0	0	83930	0	0	0	0	0	0	0	0	1	83930
AT GRADE STATION, 2 15'x850' SIDE PLATE	EA	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRACKWORK - BALLASTED	TF	3280	433	0	0	0	1869	0	0	0	0	0	0	0	0
TRACKWORK - DIRECT FIXATION	TF	5420	1247	2130	1967	4296	988	0	0	0	0	0	0	15340	2302
SPECIAL TRACKWORK, TURNOUTS, ETC.	LS	1	350	0	410	0	595	0	0	0	0	0	0	3	1355
TRACTION POWER SYSTEM (SYS WIDE)	EA	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SIGNALING - WAYSIDE AND STATION	LS	0	0	0	0	0	0	0	1	3376	0	0	0	1	3376
COMMUNICATIONS (SYSTEM WIDE)	TF	0	0	0	0	0	0	0	1	6639	0	0	0	1	6639
YARDS & SHOPS (SYSTEM WIDE)	EA	0	0	0	0	0	3702	0	0	0	0	0	0	1	3702
ROLLING STOCK (SYSTEM WIDE)	EA	0	0	0	0	0	0	0	25	45000	0	0	0	25	45000
LOCOMOTIVE CONVERSION/UPGRADE (SYS WIDE)	EA	0	0	0	0	0	0	0	23	2875	0	0	0	23	2875
DIESEL LOCOMOTIVE SALVAGE	EA	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PARK & RIDE LOTS & ACCESS IMPROVEMENTS	SP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL CONSTRUCTION COSTS :		\$49512	\$28810	\$124365	\$59313	\$7213		\$55015	\$0	\$2875		\$0	\$0		\$327103
NON-CONSTRUCTION COSTS															
RIGHT OF WAY & RELOCATION	EA	1	1751	0	1	1000	0	0	0	0	0	0	0	4	7331
ENGINEERING & MANAGEMENT	0	12553	10302	0	21087	0	288	0	3854	0	0	0	0	0	82547
SUBTOTAL NON-CONSTRUCTION COSTS :		\$14304	\$10302	\$37060	\$21167	\$2903		\$3854	\$0	\$288		\$0	\$0		\$89878
CONTINGENCY															
CONTINGENCY	0	14048	7812	0	43539	0	16200	0	7775	0	0	0	0	0	92520
ESCALATION															
ESCALATION (NOT INCLUDED)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PROJECT RESERVE															
PROJECT RESERVE	0	6229	3754	0	16397	0	7734	0	3082	0	0	0	0	0	38510
TOTAL :		\$94093	\$50678	\$221361	\$104414	\$13485	\$4254	\$69726	\$0	\$4254		\$0	\$0		\$548011

Table 5-2

ALTERNATIVE COMPARISON: TT ALT - TRANSBAY TERMINAL ALTERNATIVES

DESCRIPTION	UNIT	ALT.: 3A_CTD		ALT.: 3A_MTD		ALT.: 3B_CTD		ALT.: 3B_MTD		COST	QTY	COST	QTY	COST	QTY	COST	QTY	COST	QTY	COST	
		QTY	COST	QTY	COST	QTY	COST	QTY	COST												QTY
SYSTEM DATA																					
ROUTE LENGTH	RF	9800	0	9568	0	9800	0	9568	0	9568	0	0	0	0	0	0	0	0	0	0	
TRACK LENGTH	TF	36200	0	35736	0	36200	0	35736	0	35736	0	0	0	0	0	0	0	0	0	0	
CONSTRUCTION COSTS																					
SITE MODIFICATIONS:																					
-DEMOLITION	RF	6332	8895	3952	8657	6332	8895	3952	8657	8657	0	0	0	0	0	0	0	0	0	0	
-UTILITY RELOCATIONS/MODIFICATIONS	RF	9801	12095	9569	9804	9801	13451	9569	11160	11160	0	0	0	0	0	0	0	0	0	0	
-STREET AND ROAD MODIFICATIONS	RF	8735	1449	6355	735	8735	1449	6355	735	735	0	0	0	0	0	0	0	0	0	0	
-RAILROAD MODIFICATIONS	LS	2	1500	2	1500	2	1500	2	1500	1500	0	0	0	0	0	0	0	0	0	0	
-STRUCTURE MODIFICATIONS	LS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
-UNDERPINNING	LS	1	1000	1	1000	2	1000	2	1000	1000	0	0	0	0	0	0	0	0	0	0	
-ENVIRONMENTAL MITIGATIONS	LS	2	2500	2	2500	2	3290	2	3290	3290	0	0	0	0	0	0	0	0	0	0	
TRACKWAY - AERIAL	RF	670	4824	670	4824	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
TRACKWAY - AT GRADE	RF	1640	164	1640	164	1640	164	1640	164	164	0	0	0	0	0	0	0	0	0	0	
TRACKWAY - RETAINED CUT	RF	1220	10261	1220	10261	920	7416	920	7416	7416	0	0	0	0	0	0	0	0	0	0	
SUBWAY:	RF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
-CUT AND COVER (SPTC WALLS), 2-TRACK RF	RF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
-CUT AND COVER (SPTC WALLS), 4-TRACK RF	RF	1390	28894	1390	28894	1390	28894	1390	28894	28894	0	0	0	0	0	0	0	0	0	0	
-CUT AND COVER (SOIL-CEMENT WALLS)	RF	2295	44362	250	4641	2915	55872	870	16151	16151	0	0	0	0	0	0	0	0	0	0	
-CUT AND COVER (MESH/ROCK BOLTS)	RF	1400	37039	3213	85005	1750	46299	3563	94265	94265	0	0	0	0	0	0	0	0	0	0	
-MINED TUNNEL & SPECIAL CONSTRUCTION RF	RF	1400	37039	3213	85005	1750	46299	3563	94265	94265	0	0	0	0	0	0	0	0	0	0	
TERMINAL - STRUCT/FINISH, APPROX. 1,100'EA	EA	1	60775	1	60775	1	82382	1	83930	83930	0	0	0	0	0	0	0	0	0	0	
AT GRADE STATION, 2 15'x850' SIDE PLAT EA	EA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
TRACKWORK - BALLASTED	TF	15340	2302	15340	2302	15340	2302	15340	2302	2302	0	0	0	0	0	0	0	0	0	0	
TRACKWORK - DIRECT FIXATION	TF	20860	4799	20396	4692	20860	4799	20396	4692	4692	0	0	0	0	0	0	0	0	0	0	
SPECIAL TRACKWORK, TURNOUTS, ETC.	LS	3	1355	3	1355	3	1355	3	1355	1355	0	0	0	0	0	0	0	0	0	0	
TRACTION POWER SYSTEM (SYS WIDE)	EA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
SIGNALING - WAYSIDE AND STATION	LS	1	3376	1	3376	1	3376	1	3376	3376	0	0	0	0	0	0	0	0	0	0	
COMMUNICATIONS (SYSTEM WIDE)	TF	1	6639	1	6639	1	6639	1	6639	6639	0	0	0	0	0	0	0	0	0	0	
YARDS & SHOPS (SYSTEM WIDE)	EA	1	3702	1	3702	1	3702	1	3702	3702	0	0	0	0	0	0	0	0	0	0	
ROLLING STOCK (SYSTEM WIDE)	EA	25	45000	25	45000	25	45000	25	45000	45000	0	0	0	0	0	0	0	0	0	0	
LOCOMOTIVE CONVERSION/UPGRADE (SYS WIDE)EA	EA	23	2875	23	2875	23	2875	23	2875	2875	0	0	0	0	0	0	0	0	0	0	
DIESEL LOCOMOTIVE SALVAGE	EA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
PARK & RIDE LOTS & ACCESS IMPROVEMENTS SP	SP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Subtotal CONSTRUCTION COSTS :			\$283806		\$288701		\$320660		\$327103		\$0		\$0		\$0		\$0		\$0	\$0	
NON-CONSTRUCTION COSTS																					
RIGHT OF WAY & RELOCATION	EA	4	9242	4	7331	4	9242	4	7331	7331	0	0	0	0	0	0	0	0	0	0	
ENGINEERING & MANAGEMENT	0	65620	0	71928	0	75852	0	75852	0	82547	82547	0	0	0	0	0	0	0	0	0	
Subtotal NON-CONSTRUCTION COSTS :			\$74862		\$79259		\$85094		\$89878		\$0		\$0		\$0		\$0		\$0	\$0	
CONTINGENCY																					
CONTINGENCY	0	78171	0	79519	0	90611	0	92520	0	92520	92520	0	0	0	0	0	0	0	0	0	
ESCALATION																					
ESCALATION (NOT INCLUDED)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
PROJECT RESERVE																					
PROJECT RESERVE	0	32697	0	33548	0	37459	0	37459	0	38510	38510	0	0	0	0	0	0	0	0	0	
TOTAL :			\$469536		\$481027		\$533924		\$548011		\$0		\$0		\$0		\$0		\$0	\$0	

Table 5-3

6. CONTINGENCIES AND ADD-ONS

This section describes the contingencies and other add-ons to the construction and right-of-way cost items.

ENGINEERING AND MANAGEMENT

Engineering and Management includes engineering, supervision and construction management by a General Engineering Consultant (GEC) including all subconsultants and engineering and administration by the Joint Powers Board (excluding the cost of financing). The breakdown into major sub-categories is as follows:

- 1 Project Administration - 8 percent of construction costs.
- 2 Design Engineering - 10 percent of construction costs.
- 3 Construction Management - 6 percent of construction costs.
- 4 Insurance - 0.5 percent of construction costs.
- 5 Pre-operating expenses - 0.5 percent of construction costs.

SUM TOTAL: 25% (10% on vehicles and R/W)

CONTINGENCY

Contingency is an allowance to cover design development and recognizes the approximate estimating methods used at this stage of the project. Contingency has been evaluated on a percentage basis for each individual system element to consider the specific definition information provided and the specific estimating methods used; the percentage varies from 10% to 40% as can be seen in Table 6.1, *Standard Add-ons at Segment Level*.

ESCALATION

Cost escalation to time of expenditure dollars has not been included. The estimate was prepared in July 1995 base year dollars. No construction schedule has been developed. A detailed plan for construction phasing, including traffic maintenance and detours, should be prepared before escalation is calculated.

PROJECT RESERVE

Project reserve is an allowance to provide for changes that occur during construction; particularly construction change orders and claims. It is set at a nominal 8%. See table 6.1, *Standard Add-Ons at Segment Level*.

TABLE : SEG - STANDARD ADDONS AT SEGMENT LVL

DESCRIPTION	%	ENGRG. %	CONTIN %	ESCAL. %	RESERV %
ROUTE LENGTH					
TRACK LENGTH					
SITE MODIFICATIONS:					
-DEMOLITION		25.0	40.0		8.0
-UTILITY RELOCATIONS/MODIFICATIONS		25.0	30.0		8.0
-STREET AND ROAD MODIFICATIONS		25.0	40.0		8.0
-RAILROAD MODIFICATIONS		25.0	40.0		8.0
-STRUCTURE MODIFICATIONS		25.0	30.0		8.0
-UNDERPINNING		25.0	30.0		8.0
-ENVIRONMENTAL MITIGATIONS		25.0	25.0		8.0
TRACKWAY - AERIAL		25.0	20.0		8.0
TRACKWAY - AT GRADE		25.0	30.0		8.0
TRACKWAY - RETAINED CUT		25.0	20.0		8.0
SUBWAY:		25.0	20.0		8.0
-CUT AND COVER (SPTC WALLS) , 2-TRACK		25.0	20.0		8.0
-CUT AND COVER (SPTC WALLS) , 4-TRACK		25.0	20.0		8.0
-CUT AND COVER (SOIL-CEMENT WALLS)		25.0	20.0		8.0
-CUT AND COVER (MESH/ROCK BOLTS)		25.0	20.0		8.0
-MINED TUNNEL & SPECIAL CONSTRUCTION		36.0	20.0		8.0
STATION - STRUCT/FINISH, APPROX. 1,100'		25.0	20.0		8.0
TRACKWORK - BALLASTED		25.0	15.0		8.0
TRACKWORK - DIRECT FIXATION		25.0	15.0		8.0
SPECIAL TRACKWORK, TURNOUTS, ETC.		25.0	20.0		8.0
TRACTION POWER SYSTEM (SYS WIDE)		25.0	25.0		8.0
SIGNALING - WAYSIDE AND STATION		25.0	25.0		8.0
COMMUNICATIONS (SYSTEM WIDE)		25.0	25.0		8.0
YARDS & SHOPS (SYSTEM WIDE)		25.0	25.0		8.0
ROLLING STOCK (SYSTEM WIDE)		3.0	10.0		3.0
LOCOMOTIVE CONVERSION/UPGRADE (SYS WIDE)		10.0	25.0		8.0
DIESEL LOCOMOTIVE SALVAGE					
PARK & RIDE LOTS & ACCESS IMPROVEMENTS		25.0	30.0		8.0
RIGHT OF WAY & RELOCATION		10.0	25.0		8.0
ENGINEERING & MANAGEMENT			20.0		8.0
CONTINGENCY					8.0
ESCALATION (NOT INCLUDED)					
PROJECT RESERVE					

GENERAL

Add-on percentages are based on team experience from other similar projects. For this project, add-on percentages are generally included per Table 5.4 *Standard Add-Ons at Segment Level*. In certain cases, where the add-ons have been specifically evaluated or unusual circumstances prevail, different percentages have been used.

The ICF KE computerized-estimating program allows these add-ons to be varied on a case-by-case basis. Contingency in particular has been adjusted in selected situations where there is a variation in the degree of uncertainty. The contingencies listed in Table 5.4 are guidelines. These have been modified as appropriate and will be further adjusted for the *Preliminary Capital Cost Estimates* should more detailed data become available on the site conditions and/or the design of the project components.

APPENDIX A



CALTRAIN DOWNTOWN EXTENSION
SAN FRANCISCO, CALIF.

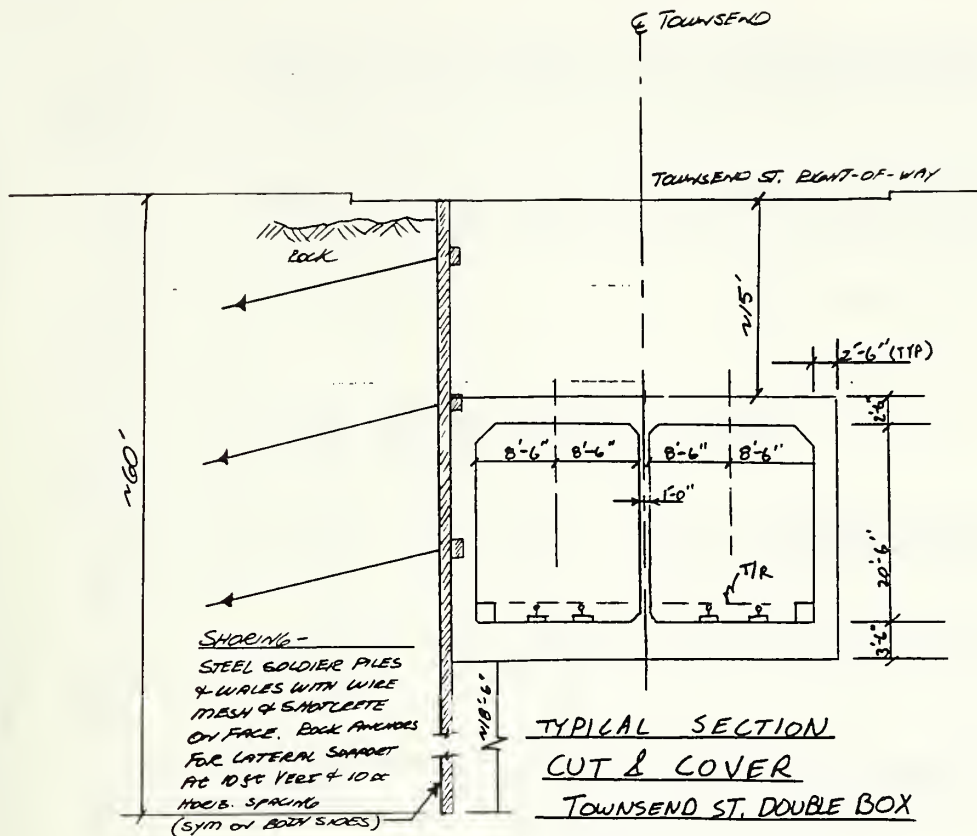
SUMMARY OF DEVELOPED TYPICAL TRACKWAY COSTS

9/27/95
BY BCC/RLM

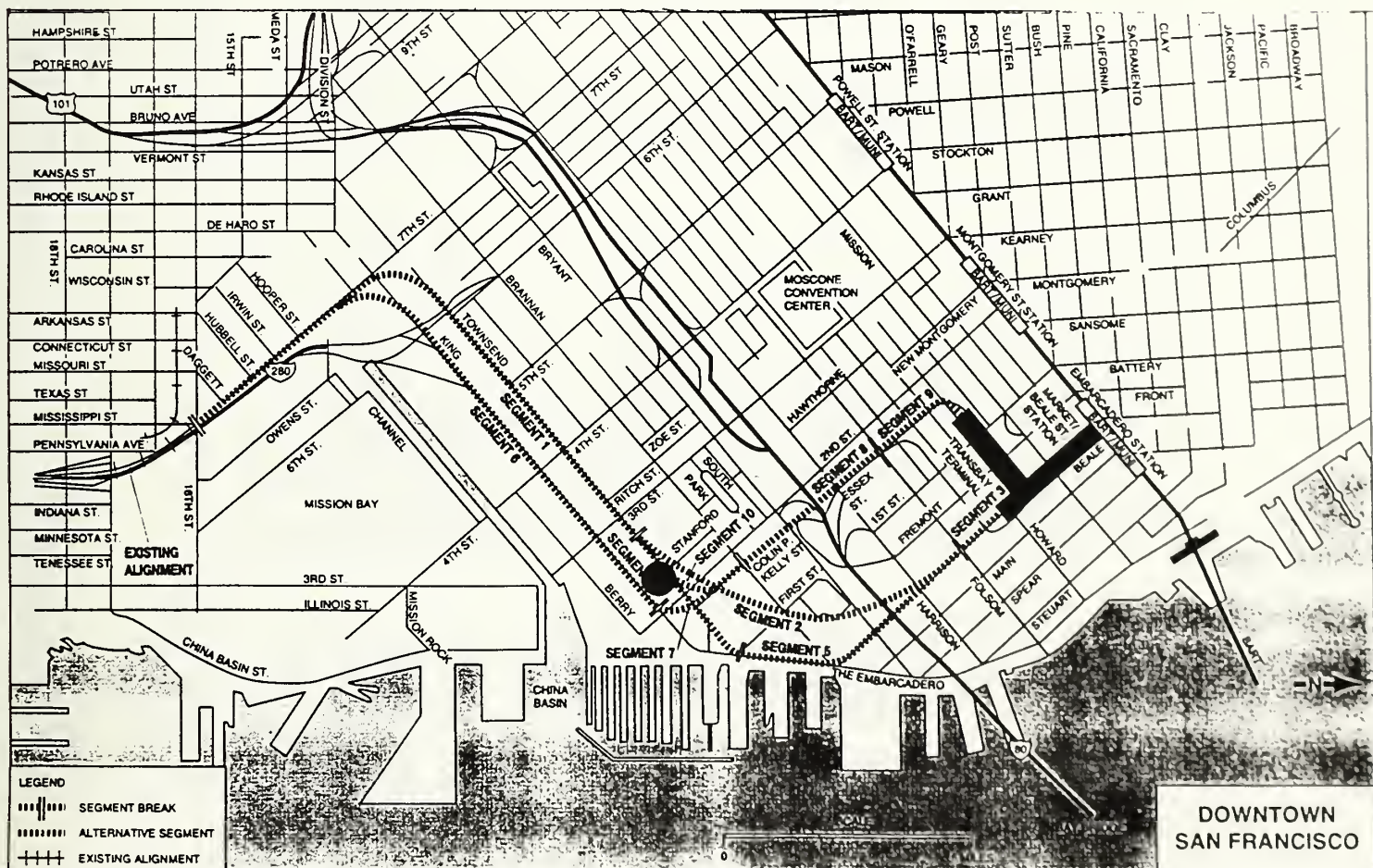
FAC. #	DESCRIPTION	NO. OF TRACKS	RF	TOTAL DOLLARS	COST \$/RF	COMMENTS
200	<u>RAIL TRACKWAY</u>					
243	CUT & COVER, 2 BOX, 2 TRK (SOIL CEMENT WALL)	2	100 RF	\$1,907,062	\$19,071	THROUGHOUT TRACKWAY
244	CUT & COVER, 2 BOX, 2 TRK (ROCK BOLT WALL)	2	100 RF	\$1,718,941	\$17,189	TOWNSEND BETWEEN 1ST & 2ND
245	CUT & COVER, 2 BOX, 2 TRK (SPTC WALL)	2	100 RF	\$3,301,511	\$33,015	ALTERNATIVE 2A, ALONG BEALE STREET
246	CUT & COVER, 2 BOX, 4 TRK (SPTC WALL)	4	100 RF	\$5,250,542	\$52,505	ALTERNATIVE 2A, ALONG BEALE STREET
247	CUT & COVER, 3 BOX, 4 TRK (SPTC WALL)	4	100 RF	\$6,312,151	\$63,122	ALTERNATIVE 2A, ALONG BEALE STREET
248	CUT & COVER, 2 BOX, 2 TRK (ROCK BOLT WALL)	2	100 RF	\$3,015,497	\$30,155	AT MINED TUNNEL PORTAL
251	MINED TUNNEL, DOUBLE TRACK WITH MULT. DRIPTS	2	100 RF	\$2,568,581	\$25,686	ALTERNATIVES 2 & 3 ALONG MINED TUNNEL
256	RETAINED CUT (SOIL CEMENT WALL)	2	100 RF	\$948,262	\$9,483	TOWNSEND BETWEEN 5TH AND 6TH
291	SPECIAL CONSTRUCTION @ BAY BRIDGE ANCHORAGE	4	125RF	\$15,036,215	\$120,290	BAY BRIDGE ANCHORAGE, ALONG BEALE ST.

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--- FACIL. STANDRD. WKPKG =====	DESCRIPTION =====	QUANTITY =====	MANHOURS =====	LABOR =====	EQUIP USAGE =====	MATERIAL =====	SUB- CONTRACT =====	EQUIP- MENT =====	OH&P =====	TOTAL DOLLARS =====
243	CUT & COVER, 2 BOX, 2 TRK									
243 .0000000.	100' SECTION, UTILIZING	0	0	0	0	0	0	0	0	0
	SOIL-CEMENT SHORING									
243 .0214100.	SAW CUT ROAD PAVEMENT	200 LF	24	793	164	1059	0	0	489	2505
243 .0214101.	REMOVE ROAD PAVEMENT- 16"THK.	444 SY	111	4243	718	0	0	0	1984	6945
243 .0214220.	TRAFFIC MAINTENANCE (TYP)	100 RF	500	0	0	0	18181	0	909	19090
243 .0214515.	STREET DECKING W/STEEL GIRDER AND TIMBER	444 SY	1316	56979	10758	40948	34343	0	32907	175935
243 .0214632.	REMOVE CONCRETE GUIDE WALLS	200 LF	0	0	0	0	18182	0	909	19091
243 .0214634.	REMOVE TOP OF SOIL CEMENT WALL	89 CY	0	0	0	0	5664	0	283	5947
243 .0220228.	3' THICK SOIL CEMENT WALL. WITH SOLDIER PILES INCLUDED (W 24 X 94 H - PILES) > 75'	15200 SF	1976	0	0	0	334400	0	16720	351120
243 .0220240.	HAUL TO DUMP DEBRIS	6711 CY	0	0	0	0	67110	0	3356	70466
243 .0220242.	DUMP FEE (CONTAMINATED MATERIAL)	6711 CY	0	0	0	0	80532	0	4027	84559
243 .0220332.	COMPACTED FILL	2222 CY	671	23739	3631	25820	0	0	13530	66720
243 .0221109.	DEWATERING	100 RF	0	0	0	0	36364	0	1818	38182
243 .0221120.	EXCAV MASS-2CY CLAMSHHELL	6148 CY	799	31960	16907	0	0	0	19547	68414
243 .0223112.	SITE FILL - IMPORTED	2222 CY	0	0	0	0	15554	0	778	16332
243 .0267250.	INSTRUMENTATION	100 RF	0	0	0	0	8000	0	400	8400
243 .0310100.	FORMS - GENERAL	13600 SF	2856	128025	2734	13133	0	0	35973	179865
243 .0313206.	NEOPRENE WATERSTOPS,DB, 6"	300 LF	27	1210	26	1689	0	0	731	3656
243 .0332300.	REBAR - GENERAL	366690 LB	3300	139439	23835	103443	0	0	66679	333396
243 .0334300.	CONCRETE - SLAB ON GRADE	518 CY	259	9693	1598	35970	0	0	11815	59076
243 .0334301.	CONCRETE - WALKWAY	46 CY	92	3360	109	3394	0	0	1716	8579
243 .0344820.	CONCRETE - UPPER SLAB	370 CY	370	13847	2283	25693	0	0	10456	52279
243 .0344821.	CONCRETE - CHAMFER	46 CY	81	3031	497	3394	0	0	1731	8653
243 .0354401.	CONCRETE - INTERIOR WALL	78 CY	137	5127	842	5416	0	0	2846	14231
243 .0354409.	CONCRETE - LOWER WALLS	380 CY	1140	42665	7032	28036	0	0	19433	97166
243 .0511131.	STRUCTURAL STEEL - STRUTS	205 TON	820	35150	6411	88970	0	0	32633	163164
	2' DIAM. X 1" STEEL PIPE, WHALERS W36 X 300 & MISC WALL HANDRAIL GALV. METAL WALKWAY 2.5' WIDE (SUBW AY)	200 LF	40	1720	240	2841	0	0	1200	6001
243 .0554140.		200 LF	160	6879	960	3099	0	0	2735	13673
243 .0711030.	RIGIDBOARD PROTECTION	1544 SF	15	493	9	1595	0	0	524	2621
243 .1573201.	WET STANDPIPE	200 TF	0	0	0	0	20000	0	1000	21000
243 .1634200.	LIGHTING (SUBWAY)	200 LF	0	0	0	0	9520	0	476	9996
	TOTAL		14,694	508,353	78,754	384,500	647,850	0	287,605	1,907,062



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ESTIMATING SERVICES



REPORT D1 - ESTIMATE DETAIL BY FACILITY

---WORK BREAKDOWN---	DESCRIPTION	QUANTITY	MANHOURS	LABOR	EQUIP USAGE	MATERIAL	SUB- CONTRACT	EQUIP- MENT	OH&P	TOTAL DOLLARS
FACIL.STANDRD.WKPKG										
244	CUT & COVER, 2 BOX, 2 TRK									
244	100' SECTION, UTILIZING	0	0	0	0	0	0	0	0	0
244	ROCK BOLT SHORING.									
244	SAW CUT ROAD PAVEMENT	200 LF	24	793	164	1059	0	0	489	2505
244	REMOVE ROAD PAVEMENT- 16"THK.	444 SY	111	4243	718	0	0	0	1984	6945
244	TRAFFIC MAINTENANCE (TYP)	100 RF	500	0	0	0	18181	0	909	19090
244	STREET DECKING W/STEEL GIRDER AND TIMBER	444 SY	1316	56979	10758	40948	34343	0	32907	175935
244	REMOVE CONCRETE GUIDE WALLS	200 LF	0	0	0	0	18182	0	909	19091
244	REMOVE TOP OF SOIL CEMENT WALL	89 CY	0	0	0	0	5664	0	283	5947
244	HAUL TO DUMP DEBRIS	6148 CY	0	0	0	0	61480	0	3074	64554
244	DUMP FEE (CONTAMINATED MATERIAL)	6148 CY	0	0	0	0	73776	0	3689	77465
244	COMPACTED FILL	2222 CY	671	23739	3631	25820	0	0	13530	66720
244	DEWATERING	100 RF	0	0	0	0	18182	0	909	19091
244	EXCAV MASS-2CY CLAMSHELL	6148 CY	799	31960	16907	0	0	0	19547	68414
244	AUGERHOLES, VERTICAL, 24" DIA FOR DEPTH UP TO 75'	2000 LF	0	0	0	0	100000	0	5000	105000
244	SITE FILL - IMPORTED	2222 CY	0	0	0	0	15554	0	778	16332
244	PLACE STEEL PILES - H SECTION WF 14 X 82 LB/LF	2000 LF	750	33489	3342	40926	0	0	18825	96582
244	WIRE MESH AND SHOTCRETE - 6"	8300 SF	1660	61920	3818	31519	0	0	29447	126704
244	ROCK BOLTS 30' X 1"	80 EA	0	0	0	4340	24000	0	1634	29974
244	INSTRUMENTATION	100 RF	0	0	0	0	8000	0	400	8400
244	FORMS - GENERAL	13600 SF	2856	128025	2734	13133	0	0	35973	179865
244	NEOPRENE WATERSTOPS,DB, 6"	300 LF	27	1210	26	1689	0	0	731	3656
244	REBAR - GENERAL	366690 LB	3300	139439	23835	103443	0	0	66679	333396
244	CONCRETE - SLAB ON GRADE	518 CY	259	9693	1598	35970	0	0	11815	59076
244	CONCRETE - WALKWAY	46 CY	92	3360	109	3394	0	0	1716	8579
244	CONCRETE - UPPER SLAB	370 CY	370	13847	2283	25693	0	0	10456	52279
244	CONCRETE - CHAMFER	46 CY	81	3031	497	3394	0	0	1731	8653
244	CONCRETE - INTERIOR WALL	78 CY	137	5127	842	5416	0	0	2846	14231
244	CONCRETE - LOWER WALLS	380 CY	1140	42665	7032	28036	0	0	19433	97166
244	WALL HANDRAIL GALV.	200 LF	40	1720	240	2841	0	0	1200	6001
244	METAL WALKWAY 2.5' WIDE (SUBW AY)	200 LF	160	6879	960	3099	0	0	2735	13673
244	RIGIDBOARD PROTECTION	1544 SF	15	493	9	1595	0	0	524	2621
244	WET STANDPIPE	200 TF	0	0	0	0	20000	0	1000	21000
244	LIGHTING (SUBWAY)	200 LF	0	0	0	0	9520	0	476	9996
TOTAL CUT & COVER, 2 BOX, 2 TRK			14,308	568,612	79,503	372,315	406,882	0	291,629	1,718,941

---WORK BREAKDOWN---	DESCRIPTION	QUANTITY	MANHOURS	LABOR	EQUIP USAGE	MATERIAL	SUB- CONTRACT	EQUIP- MENT	OH&P	TOTAL DOLLARS
FACIL.STANDRD.WKPKG										
245	CUT & COVER, 2 BOX, 2 TRK									
245 .0000000.	100' SECTION, UTILIZING	0	0	0	0	0	0	0	0	0
	SPTC SHORING.									
245 .0214100.	SAW CUT ROAD PAVEMENT	200 LF	24	793	164	1059	0	0	489	2505
245 .0214101.	REMOVE ROAD PAVEMENT - 16"THK.	667 SY	167	6383	1079	0	0	0	2985	10447
245 .0214220.	TRAFFIC MAINTENANCE (TYP)	100 RF	500	0	0	0	18181	0	909	19090
245 .0214515.	STREET DECKING W/STEEL GIRDER AND TIMBER	444 SY	1316	56979	10758	40948	34343	0	32907	175935
245 .0214631.	REMOVE TOP OF SLURRY WALL	89 CY	312	11617	1385	0	0	0	5201	18203
245 .0214632.	REMOVE CONCRETE GUIDE WALLS	200 LF	0	0	0	0	18182	0	909	19091
245 .0220220.	SLURRY WALL CONSTRUCTION WITH SOLDIER PILES, REINF. CAGE AND TRENIE CONCRETE METHOD	16000 SF	0	0	0	0	1544480	0	77224	1621704
245 .0220240.	HAUL TO DUMP DEBRIS	7407 CY	0	0	0	0	74070	0	3704	77774
245 .0220242.	DUMP FEE (CONTAMINATED MATERIAL)	7407 CY	0	0	0	0	88884	0	4444	93328
245 .0220332.	COMPACTED FILL	1926 CY	582	20590	3147	22381	0	0	11733	57851
245 .0221109.	DEVATERING	100 RF	0	0	0	0	9091	0	455	9546
245 .0221120.	EXCAV MASS-2CY CLAMSHELL	5629 CY	732	29280	15480	0	0	0	17904	62664
245 .0223112.	SITE FILL - IMPORTED	1926 CY	0	0	0	0	13482	0	674	14156
245 .0267250.	INSTRUMENTATION	100 RF	0	0	0	0	8000	0	400	8400
245 .0310100.	FORMS - GENERAL	13600 SF	2856	128025	2734	13133	0	0	35973	179865
245 .0313206.	NEOPRENE WATERSTOPS,DB, 6"	300 LF	27	1210	26	1689	0	0	731	3656
245 .0332300.	REBAR - GENERAL	379185 LB	3413	144213	24647	106968	0	0	68957	344785
245 .0334300.	CONCRETE - SLAB ON GRADE	518 CY	259	9693	1598	35970	0	0	11815	59076
245 .0334301.	CONCRETE - WALKWAY	46 CY	92	3360	109	3394	0	0	1716	8579
245 .0344820.	CONCRETE - UPPER SLAB	370 CY	370	13847	2283	25693	0	0	10456	52279
245 .0344821.	CONCRETE - CHAMFER	46 CY	81	3031	497	3394	0	0	1731	8653
245 .0354401.	CONCRETE - INTERIOR WALL	76 CY	133	4978	820	5277	0	0	2769	13844
245 .0354409.	CONCRETE - LOWER WALLS	429 CY	1287	48166	7939	31652	0	0	21939	109696
245 .0355100.	PATCHING SLURRY WALL INCLUDE CHIPPING AND CLEANING	7900 SF	1185	44402	830	2554	0	0	11947	59733
245 .0511131.	STRUCTURAL STEEL - STRUTS 2' DIAM. X 1" STEEL PIPE, WALERS W36 X 300 & MISC WALL HANDRAIL GALV. METAL WALKWAY 2.5' WIDE (SUBW AY)	273 TON	1092	46810	8538	118482	0	0	43458	217288
245 .0553110.		200 LF	40	1720	240	2841	0	0	1200	6001
245 .0554140.		200 LF	160	6879	960	3099	0	0	2735	13673
245 .0711030.	RIGIDBOARD PROTECTION	1568 SF	16	525	9	1620	0	0	539	2693
245 .1573001.		0	0	0	0	0	0	0	0	0
245 .1573201.	WET STANDPIPE	200 TF	0	0	0	0	20000	0	1000	21000
245 .1634200.	LIGHTING (SUBWAY)	200 LF	0	0	0	0	9520	0	476	9996

ICF KAISER ENGINEERS, INC.
 SAN FRANCISCO, CALIFORNIA
 JOB NO. 65928-005-05

ICF KAISER ENGINEERS INTERACTIVE ESTIMATING
 CALTRAIN DOWNTOWN EXTENSION

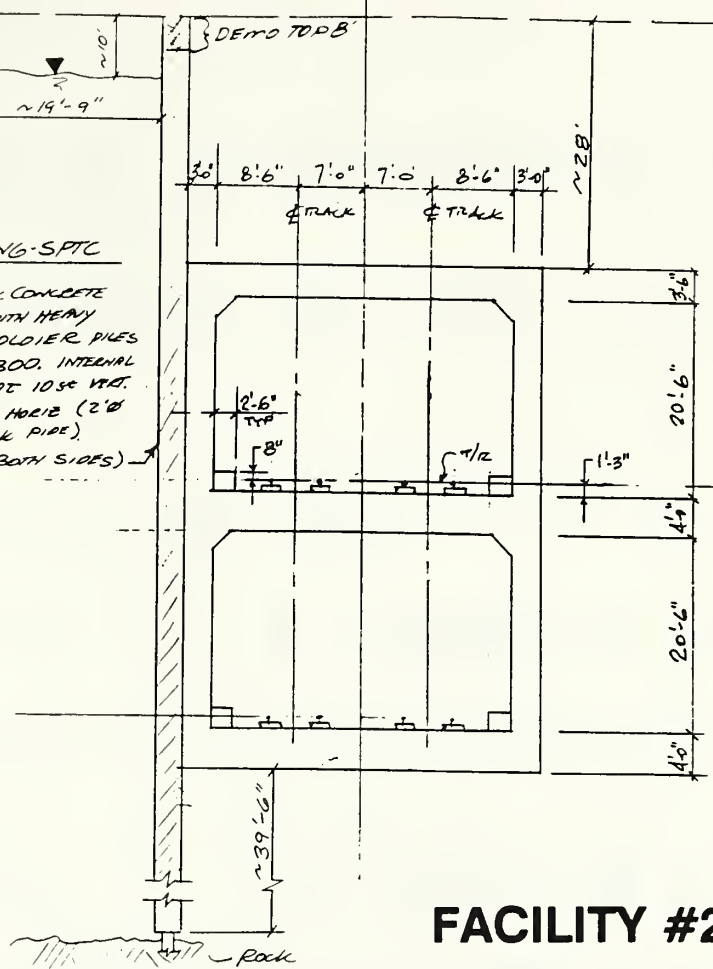
REPORT D1 - ESTIMATE DETAIL BY FACILITY

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---WORK BREAKDOWN---		FACIL.STANDRD.WKPKG		DESCRIPTION		QUANTITY	MANHOURS	LABOR	EQUIP USAGE	MATERIAL	SUB- CONTRACT	EQUIP- MENT	OH&P	TOTAL DOLLARS
=====		=====		=====		=====	=====	=====	=====	=====	=====	=====	=====	=====
TOTAL		CUT & COVER, 2 BOX, 2 TRK					14,644	582,501	83,243	420,154	1,838,233		377,380	3,301,511

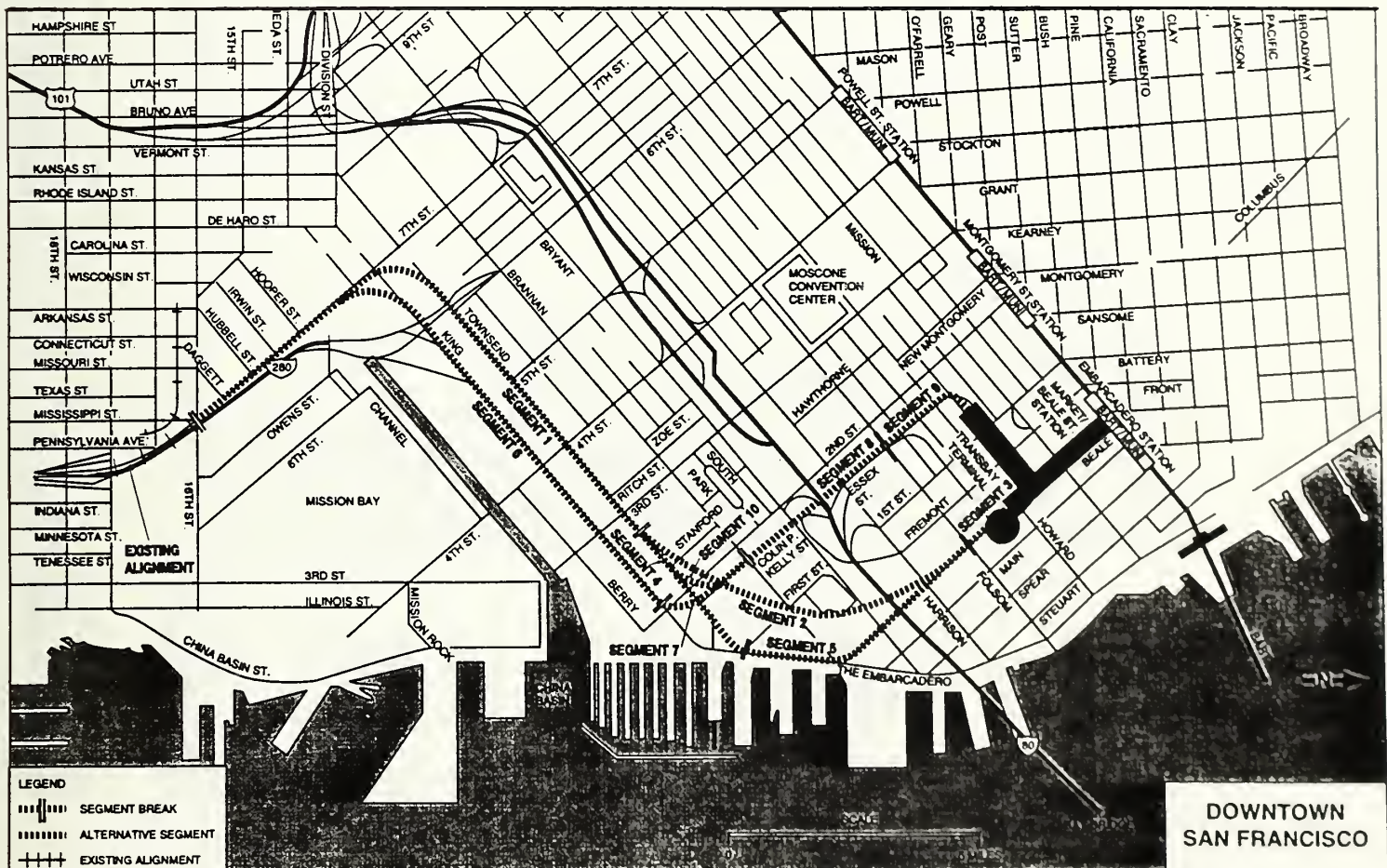
SHORING - SPTC

3 THICK CONCRETE
WALL WITH HEAVY
STEEL SOLDIER PILES
W36 X 300. INTERNAL
STRUTS AT 105% VTD.
4 20 SC HORIZ (2'0"
X 1" THICK PIPE)
(TYP ON BOTH SIDES)



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ESTIMATING SERVICES

FACILITY #246



**DOWNTOWN
SAN FRANCISCO**

---WORK BREAKDOWN---	DESCRIPTION	QUANTITY	MANHOURS	LABOR	EQUIP USAGE	MATERIAL	SUB- CONTRACT	EQUIP- MENT	OH&P	TOTAL DOLLARS
FACIL. STANDRD. WPKG										
246	CUT & COVER, 2 BOX, 4 TRK									
246 .0000000.	100' SECTION, UTILIZING	0	0	0	0	0	0	0	0	0
	SPTC SHORING.									
246 .0214100.	SAW CUT ROAD PAVEMENT	200 LF	24	793	164	1059	0	0	489	2505
246 .0214101.	REMOVE ROAD PAVEMENT - 16"THK.	667 SY	167	6383	1079	0	0	0	2985	10447
246 .0214220.	TRAFFIC MAINTENANCE (TYP)	100 RF	500	0	0	0	18181	0	909	19090
246 .0214515.	STREET DECKING W/STEEL GIRDER AND TIMBER	411 SY	1218	52736	9958	37904	31791	0	30458	162847
246 .0214631.	REMOVE TOP OF SLURRY WALL	89 CY	312	11617	1385	0	0	0	5201	18203
246 .0214632.	REMOVE CONCRETE GUIDE WALLS	200 LF	0	0	0	0	18182	0	909	19091
246 .0220220.	SLURRY WALL CONSTRUCTION WITH SOLDIER PILES, REINF. CAGE AND TREMI CONCRETE METHOD	24000 SF	0	0	0	0	2316720	0	115836	2432556
246 .0220240.	HAUL TO DUMP DEBRIS	13493 CY	0	0	0	0	134930	0	6747	141677
246 .0220242.	DUMP FEE (CONTAMINATED MATERIAL)	13493 CY	0	0	0	0	161916	0	8096	170012
246 .0220332.	COMPACTED FILL	3563 CY	1076	38067	5822	41403	0	0	21696	106988
246 .0221109.	DEWATERING	100 RF	0	0	0	0	27273	0	1364	28637
246 .0221120.	EXCAV MASS-2CY CLAMSHELL	10826 CY	1407	56280	29772	0	0	0	34421	120473
246 .0223112.	SITE FILL - IMPORTED	3563 CY	0	0	0	0	24941	0	1247	26188
246 .0267250.	INSTRUMENTATION	100 RF	0	0	0	0	8000	0	400	8400
246 .0310100.	FORMS - GENERAL	15800 SF	3318	148735	3176	15257	0	0	41792	208960
246 .0313206.	NEOPRENE WATERSTOPS, DB, 6"	400 LF	36	1614	34	2252	0	0	975	4875
246 .0332300.	REBAR - GENERAL	695385 LB	6258	264427	45200	196168	0	0	126449	632244
246 .0334300.	CONCRETE - SLAB ON GRADE	549 CY	275	10292	1693	38123	0	0	12527	62635
246 .0334301.	CONCRETE - WALKWAY	92 CY	184	6721	218	6788	0	0	3432	17159
246 .0344820.	CONCRETE - UPPER SLAB	480 CY	480	17964	2961	33331	0	0	13564	67820
246 .0344821.	CONCRETE - CHAMFER	46 CY	81	3031	497	3394	0	0	1731	8653
246 .0344830.	CONCRETE - SUPPORTED SLAB AND BEAMS	549 CY	549	20546	3387	38123	0	0	15514	77570
246 .0354409.	CONCRETE - LOWER WALLS	1009 CY	3027	113285	18673	74444	0	0	51601	258003
246 .0355100.	PATCHING SLURRY WALL INCLUDE CHIPPING AND CLEANING	16100 SF	2415	90490	1691	5206	0	0	24347	121734
246 .0511131.	STRUCTURAL STEEL - STRUTS 2" DIAM. X 1" STEEL PIPE, WHALERS W36 X 300 & MISC METAL WALKWAY 2.5' WIDE (SUBW AY)	525 TON	2100	90019	16418	227850	0	0	83572	417859
246 .0553110.	WALL HANDRAIL GALV.	400 LF	80	3439	480	5681	0	0	2400	12000
246 .0554140.	METAL WALKWAY 2.5' WIDE (SUBW AY)	400 LF	320	13758	1920	6198	0	0	5469	27345
246 .0711030.	RIGIDBOARD PROTECTION	2672 SF	27	887	16	2760	0	0	916	4579
246 .1573201.	WET STANDPIPE	400 TF	0	0	0	0	40000	0	2000	42000
246 .1634200.	LIGHTING (SUBWAY)	400 LF	0	0	0	0	19040	0	952	19992

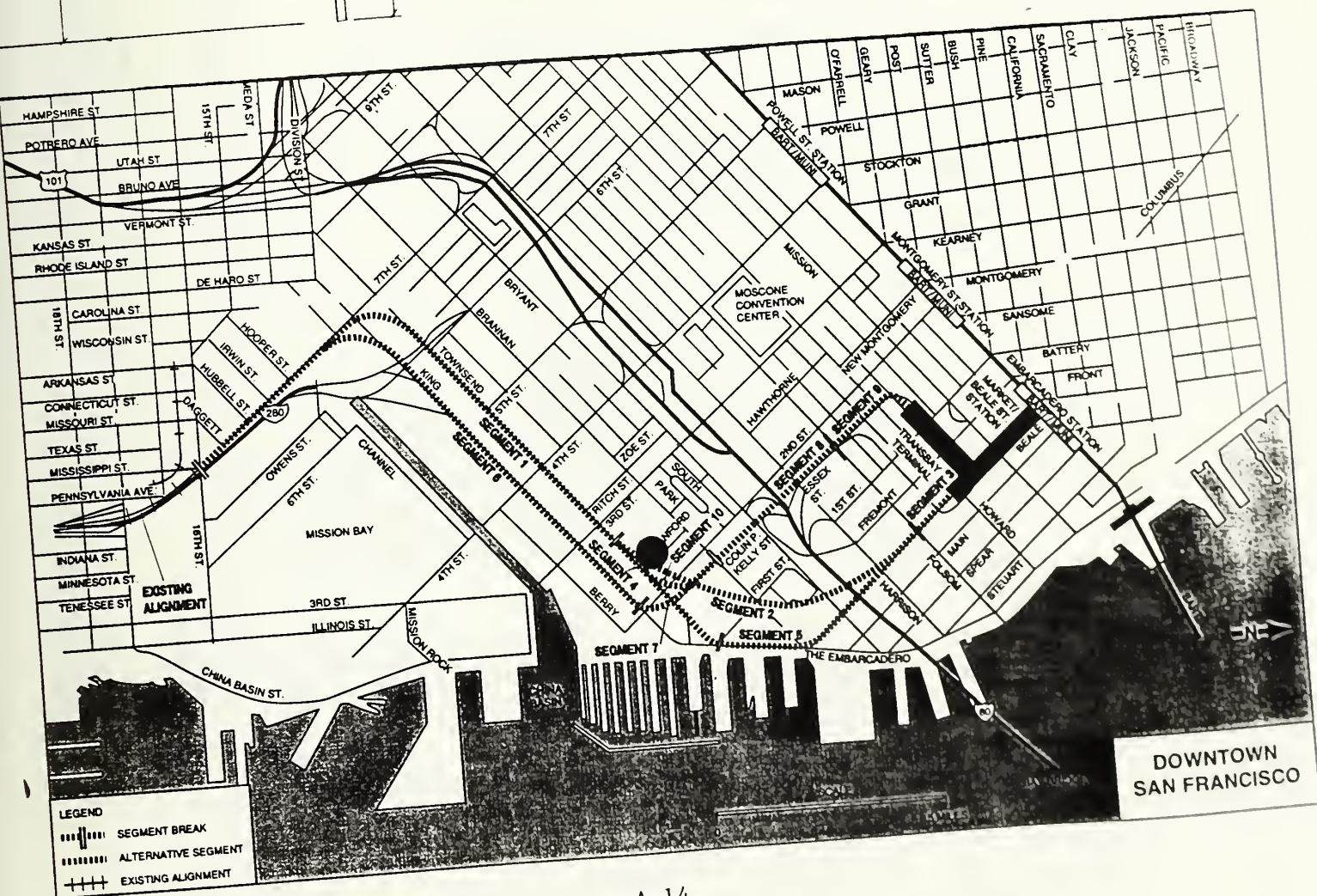
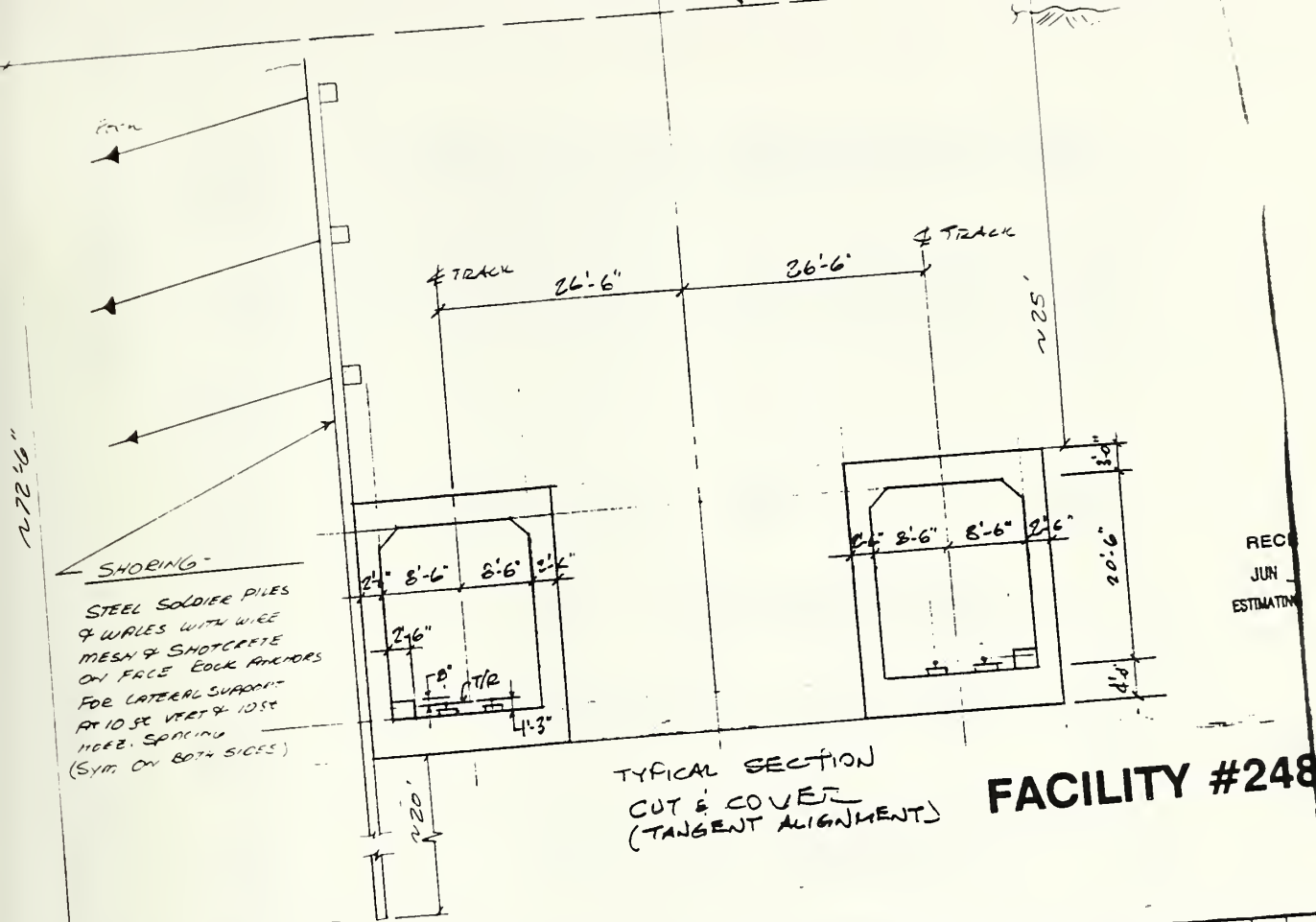
ICF KAISER ENGINEERS, INC.
 SAN FRANCISCO, CALIFORNIA
 JOB NO. 65928-005-05

ICF KAISER ENGINEERS INTERACTIVE ESTIMATING
 CALTRAIN DOWNTOWN EXTENSION
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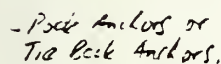
--WORK BREAKDOWN---		DESCRIPTION		QUANTITY	MANHOURS	LABOR	EQUIP USAGE	MATERIAL	SUB- CONTRACT	EQUIP- MENT	OH&P	TOTAL DOLLARS
FACIL.STANDRD.WKPKG												
=====		=====		=====	=====	=====	=====	=====	=====	=====	=====	=====
TOTAL		CUT & COVER, 2 BOX, 4 TRK			23,854	951,084	144,544	735,941	2,800,974	0	617,999	5,250,542

---WORK BREAKDOWN---													
FACIL.	STANDRD.	WPKPG	DESCRIPTION	QUANTITY	MANHOURS	LABOR	EQUIP USAGE	MATERIAL	SUB- CONTRACT	EQUIP- MENT	OH&P	TOTAL DOLLARS	
=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====
247			CUT & COVER, 3 BOX, 4 TRK										
247	.0000000.		100' SECTION, UTILIZING SPTC SHORING.	0	0	0	0	0	0	0	0	0	0
247	.0214100.		SAW CUT ROAD PAVEMENT	200 LF	24	793	164	1059	0	0	489	2505	
247	.0214101.		REMOVE ROAD PAVEMENT- 16"THK.	833 SY	208	7950	1347	0	0	0	3719	13016	
247	.0214220.		TRAFFIC MAINTENANCE (TYP)	100 RF	500	0	0	0	18181	0	909	19090	
247	.0214515.		STREET DECKING W/STEEL GIRDER AND TIMBER	833 SY	2468	106857	20183	76823	64433	0	61720	330016	
247	.0214631.		REMOVE TOP OF SLURRY WALL	89 CY	312	11617	1385	0	0	0	5201	18203	
247	.0214632.		REMOVE CONCRETE GUIDE WALLS	200 LF	0	0	0	0	18182	0	909	19091	
247	.0220220.		SLURRY WALL CONSTRUCTION WITH SOLDIER PILES,REINF. CAGE AND TREMIE CONCRETE METHOD	24000 SF	0	0	0	0	2316720	0	115836	2432556	
247	.0220240.		HAUL TO DUMP DEBRIS	23640 CY	0	0	0	0	236400	0	11820	248220	
247	.0220242.		DUMP FEE (CONTAMINATED MATERIAL)	23640 CY	0	0	0	0	283680	0	14184	297864	
247	.0220332.		COMPACTED FILL	11945 CY	3607	127611	19518	138805	0	0	72732	358666	
247	.0221109.		DEWATERING	100 RF	0	0	0	0	36364	0	1818	38182	
247	.0223120.		EXCAV MASS-2CY CLAMSHELL	20973 CY	2726	109040	57676	0	0	0	66686	233402	
247	.0223112.		SITE FILL - IMPORTED	11945 CY	0	0	0	0	83615	0	4181	87796	
247	.0267250.		INSTRUMENTATION	100 RF	0	0	0	0	8000	0	400	8400	
247	.0310100.		FORMS - GENERAL	20900 SF	4389	196744	4201	20182	0	0	55282	276409	
247	.0313206.		NEOPRENE WATERSTOPS,DB, 6"	400 LF	36	1614	34	2252	0	0	975	4875	
247	.0332300.		REBAR - GENERAL	777495 LB	6997	295652	50537	219331	0	0	141380	706900	
247	.0334300.		CONCRETE - SLAB ON GRADE	1185 CY	593	22193	3655	82286	0	0	27034	135168	
247	.0334301.		CONCRETE - WALKWAY	92 CY	184	6721	218	6788	0	0	3432	17159	
247	.0344820.		CONCRETE - UPPER SLAB	891 CY	891	33346	5497	61871	0	0	25179	125893	
247	.0344821.		CONCRETE - CHAMFER	70 CY	123	4603	756	5165	0	0	2631	13155	
247	.0354401.		CONCRETE - INTERIOR WALL	380 CY	665	24888	4102	26387	0	0	13844	69221	
247	.0354409.		CONCRETE - LOWER WALLS	430 CY	1290	48278	7958	31725	0	0	21990	109951	
247	.0355100.		PATCHING SLURRY WALL INCLUDE CHIPPING AND CLEANING	4700 SF	705	26416	494	1520	0	0	7108	35538	
247	.0511131.		STRUCTURAL STEEL - STRUTS 2' DIAM. X 1" STEEL PIPE, WALERS W36 X 300 & MISC	762 TON	3048	130656	23830	330708	0	0	121299	606493	
247	.0553110.		WALL HANDRAIL GALV.	400 LF	80	3439	480	5681	0	0	2400	12000	
247	.0554140.		METAL WALKWAY 2.5' WIDE (SUBW AY)	400 LF	320	13758	1920	6198	0	0	5469	27345	
247	.0711030.		RIGIDBOARD PROTECTION	1776 SF	18	591	11	1834	0	0	609	3045	
247	.1573201.		WET STANDPIPE	400 TF	0	0	0	0	40000	0	2000	42000	
247	.1634200.		LIGHTING (SUBWAY)	400 LF	0	0	0	0	19040	0	952	19992	
TOTAL CUT & COVER, 3 BOX, 4 TRK				29,184	1,172,767	203,966	1,018,615	3,124,615	0	792,188	6,312,151		



---WORK BREAKDOWN---	DESCRIPTION	QUANTITY	MANHOURS	LABOR	EQUIP USAGE	MATERIAL	SUB- CONTRACT	EQUIP- MENT	OH&P	TOTAL DOLLARS
FACIL.STANDRD.WKPKG										
248	CUT & COVER, 2 BOX, 2 TRAK									
248 .0000000.	100' SECTION, UTILIZING	0	0	0	0	0	0	0	0	0
	ROCK BOLT SHORING.									
248 .0214515.	STREET DECKING W/STEEL GIRDER AND TIMBER	833 SY	2468	106857	20183	76823	64433	0	61720	330016
248 .0214631.	REMOVE TOP OF SLURRY WALL	89 CY	312	11617	1385	0	0	0	5201	18203
248 .0214632.	REMOVE CONCRETE GUIDE WALLS	200 LF	0	0	0	0	18182	0	909	19091
248 .0220240.	HAUL TO DUMP DEBRIS	14583 CY	0	0	0	0	145830	0	7292	153122
248 .0220242.	DUMP FEE (CONTAMINATED MATERIAL)	14583 CY	0	0	0	0	174996	0	8750	183746
248 .0220332.	COMPACTED FILL	14539 CY	4391	155347	23757	168948	0	0	88536	436588
248 .0221109.	DEWATERING	100 RF	0	0	0	0	27273	0	1364	28637
248 .0221120.	EXCAV MASS-2CY CLAMSHELL	14583 CY	1896	75840	40103	0	0	0	46377	162320
248 .0221252.	AUGERHOLES, VERTICAL, 24"DIA FOR DEPTH UP TO 75'	2417 LF	0	0	0	0	120850	0	6043	126893
248 .0223112.	SITE FILL - IMPORTED	14539 CY	0	0	0	0	101773	0	5089	106862
248 .0232316.	PLACE STEEL PILES - H SECTION WF 14 X 82 LB/LF	2417 LF	906	40455	4039	49459	0	0	22744	116697
248 .0238201.	WIRE MESH AND SHOTCRETE - 6"	10500 SF	2100	78332	4830	39874	0	0	37252	160288
248 .0238202.	ROCK BOLTS 30' X 1"	100 EA	0	0	0	5425	30000	0	2043	37468
248 .0267250.	INSTRUMENTATION	100 RF	0	0	0	0	8000	0	400	8400
248 .0310100.	FORMS - GENERAL	17100 SF	3591	160973	3437	16513	0	0	45231	226154
248 .0313206.	NEOPRENE WATERSTOPS,DB, 6"	400 LF	36	1614	34	2252	0	0	975	4875
248 .0332300.	REBAR - GENERAL	520965 LB	4689	198130	33863	146964	0	0	94739	473696
248 .0334300.	CONCRETE - SLAB ON GRADE	652 CY	326	12201	2011	45275	0	0	14872	74359
248 .0334301.	CONCRETE - WALKWAY	46 CY	92	3360	109	3394	0	0	1716	8579
248 .0344820.	CONCRETE - UPPER SLAB	489 CY	489	18301	3017	33956	0	0	13819	69093
248 .0344821.	CONCRETE - CHAMFER	46 CY	81	3031	497	3394	0	0	1731	8653
248 .0354409.	CONCRETE - LOWER WALLS	810 CY	2430	90943	14990	59762	0	0	41424	207119
248 .0553110.	WALL HANDRAIL GALV.	200 LF	40	1720	240	2841	0	0	1200	6001
248 .0554140.	METAL WALKWAY 2.5' WIDE (SUBW AY)	200 LF	160	6879	960	3099	0	0	2735	13673
248 .0711030.	RIGIDBOARD PROTECTION	2328 SF	23	755	14	2405	0	0	794	3968
248 .1573201.	WET STANDPIPE	200 TF	0	0	0	0	20000	0	1000	21000
248 .1634200.	LIGHTING (SUBWAY)	200 LF	0	0	0	0	9520	0	476	9996

TOTAL	CUT & COVER, 2 BOX, 2 TRAK	24,030	966,355	153,469	720,857	514,432	0	3,015,497
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* Anticipated to extend below drift. 3 excavation, only in very poor soil.

FACILITY #251



---WORK BREAKDOWN---	DESCRIPTION	QUANTITY	MANHOURS	LABOR	EQUIP USAGE	MATERIAL	SUB- CONTRACT	EQUIP- MENT	OH&P	TOTAL DOLLARS
FACIL.STANDRD.WPKG										
251	MINED TUNNEL TWO TRACK									
251 .0000000.	MINED TUNNEL - DOUBLE TRACK	0	0	0	0	0	0	0	0	0
251A .0000000.	MINED TUNNEL - DOUBLE TRACK	0	0	0	0	0	0	0	0	0
251A .0220243.	INITIAL DRIFTS 3 X 100'									
251A .0238200.	HAUL OF MATERIAL - CLEAN	588 CY	0	0	0	0	3675	0	184	3859
251A .0238200.	FILL (INCLUDES DUMP FEE)									
251A .0238200.	WIRE MESH AND SHOTCRETE - 6"	750 SF	0	0	0	2848	0	0	285	3133
251A .0241002.	(MATERIAL COST ONLY)									
251A .0241002.	TUNNEL EXCAVATION - DRIFTS	588 CY	7056	271656	14112	3190	0	0	114626	403584
251A .0511110.	1, 2, AND 3 (STAGGERED CONSTRUCTION)									
251A .0511110.	STEEL SETS 15#/FT	13 TON	0	0	0	21158	0	0	5290	26448
251B .0000000.	(MATERIAL COST ONLY)									
251B .0000000.	MINED TUNNEL - DOUBLE TRACK	0	0	0	0	0	0	0	0	0
251B .0220243.	TOP HEADING - 100'									
251B .0238200.	HAUL OF MATERIAL - CLEAN	916 CY	0	0	0	0	5725	0	286	6011
251B .0238200.	FILL (INCLUDES DUMP FEE)									
251B .0238200.	WIRE MESH AND SHOTCRETE - 6"	489 SF	0	0	0	1857	0	0	186	2043
251B .0241003.	(MATERIAL COST ONLY)									
251B .0241003.	TUNNEL EXCAVATION - TOP	916 CY	4030	155155	27480	4969	0	0	73551	261155
251B .0332302.	HEADING, STAGGERED DRIFTS									
251B .0344805.	REBAR - TUNNEL	32130 LB	418	17172	964	9064	0	0	6800	34000
251B .0511111.	CONCRETE - TUNNEL ABUTMENTS	126 CY	504	18862	2310	9296	0	0	7617	38085
251B .0511111.	PUMPED, 3000 PSI									
251B .0511111.	STEEL SETS 80#/FT	44 TON	0	0	0	52514	0	0	13129	65643
251C .0000000.	(MATERIAL COST ONLY)									
251C .0220243.	MINED TUNNEL - DOUBLE TRACK	0	0	0	0	0	0	0	0	0
251C .0220243.	TOP BENCH - 100'									
251C .0238203.	HAUL OF MATERIAL - CLEAN	574 CY	0	0	0	0	3588	0	179	3767
251C .0238203.	FILL (INCLUDES DUMP FEE)									
251C .0241004.	ROCK BOLTS (MATERIAL COST ONLY) 30' X 1"	50 EA	0	0	0	2713	0	0	271	2984
251C .0241004.	TUNNEL EXCAVATION - TOP	574 CY	2353	90591	30135	3114	0	0	48602	172442
251D .0000000.	BENCH									
251D .0220243.	MINED TUNNEL - DOUBLE TRACK	0	0	0	0	0	0	0	0	0
251D .0220243.	MIDDLE BENCH - 100'									
251D .0238200.	HAUL OF MATERIAL - CLEAN	1101 CY	0	0	0	0	6881	0	344	7225
251D .0238200.	FILL (INCLUDES DUMP FEE)									
251D .0238203.	WIRE MESH AND SHOTCRETE - 6"	156 SF	0	0	0	592	0	0	59	651
251D .0238203.	(MATERIAL COST ONLY)									
251D .0241005.	ROCK BOLTS (MATERIAL COST ONLY) 30' X 1"	100 EA	0	0	0	5425	0	0	543	5968
251E .0000000.	TUNNEL EXCAVATION - MIDDLE	1101 CY	2973	114461	41288	5973	0	0	62897	224619
251E .0000000.	BENCH									
251E .0000000.	MINED TUNNEL - DOUBLE TRACK	0	0	0	0	0	0	0	0	0
251E .0000000.	LOWER BENCH - 100'									

---WORK BREAKDOWN---	DESCRIPTION	QUANTITY	MANHOURS	LABOR	EQUIP USAGE	MATERIAL	SUB- CONTRACT	EQUIP- MENT	OH&P	TOTAL DOLLARS
FACIL.STANDRD.WKPKG										
251E .0220243.	HAUL OF MATERIAL - CLEAN FILL (INCLUDES DUMP FEE)	1653 CY	0	0	0	0	10331	0	517	10848
251E .0238200.	WIRE MESH AND SHOTCRETE - 6" (MATERIAL COST ONLY)	233 SF	0	0	0	885	0	0	89	974
251E .0238203.	ROCK BOLTS (MATERIAL COST ONLY) 30' X 1"	100 EA	0	0	0	5425	0	0	543	5968
251E .0241006.	TUNNEL EXCAVATION - LOWER BENCH	1653 CY	3471	133634	49590	8968	0	0	74186	266378
251F .0000000.	MINED TUNNEL - DOUBLE TRACK LINER & FINISH - 100'	0	0	0	0	0	0	0	0	0
251F .0221109.	DEWATERING (GENERAL)	100 RF	0	0	0	0	22727	0	1136	23863
251F .0267250.	INSTRUMENTATION	100 RF	0	0	0	0	8000	0	400	8400
251F .0313206.	NEOPRENE WATERSTOPS,DB, 6"	400 LF	36	1614	34	2252	0	0	975	4875
251F .0315801.	FORMS - TUNNEL WALLS & CEILING	12600 SF	3780	161706	5670	12030	0	0	44852	224258
251F .0332302.	REBAR - TUNNEL	358785 LB	4664	191609	10764	101213	0	0	75897	379483
251F .0334302.	CONCRETE - WALKWAY (TUNNEL)	46 CY	92	3360	828	3394	0	0	1896	9478
251F .0340560.	LEAN CONCRETE FILL	79 CY	40	1517	371	3600	0	0	1372	6860
251F .0343183.	CONCRETE - TUNNEL INVERT PUMPED, 3000 PSI	439 CY	593	22193	5545	32389	0	0	15032	75159
251F .0344803.	CONCRETE - TUNNEL ROOF PUMPED, 3000 PSI	613 CY	613	22942	11236	42567	0	0	19186	95931
251F .0344804.	CONCRETE - TUNNEL WALLS PUMPED, 3000 PSI	520 CY	910	34057	9532	36109	0	0	19925	99623
251F .0553110.	WALL HANDRAIL GALV. METAL WALKWAY 2.5' WIDE (SUBW AY)	200 LF	40	1720	240	2841	0	0	1200	6001
251F .0554140.		200 LF	160	6879	960	3099	0	0	2735	13673
251F .0711020.	WATER PROOFING MEMBRANE	7900 SF	395	12972	245	11220	0	0	6109	30546
251F .1510051.	DRAINAGE FOR MINED TUNNEL	100 RF	0	0	0	0	13000	0	650	13650
251F .1573201.	WET STANDPIPE	200 TF	0	0	0	0	20000	0	1000	21000
251F .1634200.	LIGHTING (SUBWAY)	200 LF	0	0	0	0	9520	0	476	9996
TOTAL	MINED TUNNEL TWO TRACK	32,128	1,262,100	211,304	388,705	103,447	603,025	0	2,568,581	

REPORT D1 - ESTIMATE DETAIL BY FACILITY

--- FACIL. STANDARD. WPKG =====	DESCRIPTION =====	QUANTITY =====	MANHOURS =====	LABOR =====	EQUIP USAGE =====	MATERIAL CONTRACT =====	EQUIP- MENT =====	OH&P =====	TOTAL DOLLARS =====
256	"J" GUIDEWAY RETAINED CUT, SLR WALL								
256	100' SECTION, UTILIZING SOIL-CEMENT SHORING.	100	0	0	0	0	0	0	0
256	SAW CUT ROAD PAVEMENT	200 LF	24	793	164	1059	0	489	2505
256	REMOVE ROAD PAVEMENT - 16" THK.	667 SY	167	6383	1079	0	0	2985	10447
256	TRAFFIC MAINTENANCE (TYP)	100 RF	500	0	0	0	0	909	19090
256	REMOVE CONCRETE GUIDE WALLS	200 LF	0	0	0	0	0	909	19091
256	REMOVE TOP OF SOIL CEMENT WALL	89 CY	0	0	0	0	0	283	5947
256	3' THICK SOIL CEMENT WALL. WITH SOLDIER PILES INCLUDED (W 24 X 94 H - PILES) < 75'	8000 SF	0	0	0	0	0	7200	151200
256	HAUL TO DUMP DEBRIS	3644 CY	0	0	0	0	0	1822	38262
256	DUMP FEE (CONTAMINATED MATERIAL)	3644 CY	0	0	0	0	0	2186	45914
256	DEWATERING	100 RF	0	0	0	0	0	227	4772
256	EXCAV MASS-2CY CLANSHELL	3111 CY	404	16160	8555	0	0	9886	34601
256	INSTRUMENTATION	100 RF	0	0	0	0	0	400	8400
256	FORMS - GENERAL	4000 SF	840	37654	804	3863	0	10580	52901
256	NEOPRENE WATERSTOPS, DB, 6"	200 LF	18	807	17	1126	0	488	2438
256	REBAR - GENERAL	233835 LB	2105	88945	15199	65965	0	42527	212636
256	CONCRETE - SLAB ON GRADE	545 CY	273	10217	1681	37845	0	12436	62179
256	CONCRETE - WALKWAY	46 CY	92	3360	109	3394	0	1716	8579
256	CONCRETE - LOWER WALLS	325 CY	975	36489	6014	23979	0	16621	83103
256	STRUCTURAL STEEL - STRUTS 2' DIAM. X 1" STEEL PIPE,	70 TON	280	12003	2189	30380	0	11143	55715
256	WHALERS W36 X 300 & MISC FENCE - ORNAMENTAL	200 LF	0	0	0	0	0	3640	76440
256	ARCHITECTURAL TREATMENT OF RETAINED CUT WALL.	2000 SF	0	0	0	0	0	364	7644
256	LANDSCAPING FOR RETAINED CUT WALL HANDRAIL GALV.	100 LF	0	0	0	0	0	182	3818
256	METAL WALKWAY 2.5' WIDE (SUBW AY)	200 LF	40	1720	240	2841	0	1200	6001
256	RIGIDBOARD PROTECTION WET STANDPIPE	200 LF	160	6879	960	3099	0	2735	13673
256	1120 SF	11	361	7	1157	0	0	381	1906
256	200 TF	0	0	0	0	0	0	1000	21000
TOTAL			5,889	221,771	37,018	174,708	382,456	132,309	948,262

BEAR ST FLIGHT-OF-WAY

for Harrison St.
Bridge, Trp. both sides

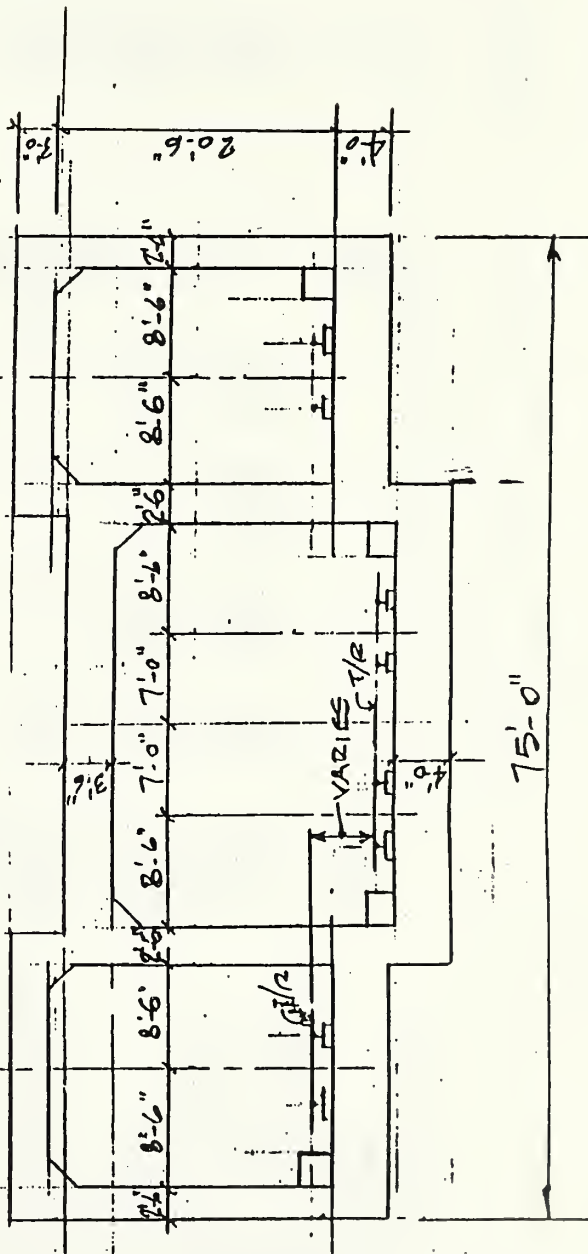
WEST
ANCHORAGE

RECEIVED

SEP 1 1995

ESTIMATING SERVICES

TRACK 26'-6" TRACK



SEGMENT 3AC
FACILITY # 291

SECTION D
Looking to north

---WORK BREAKDOWN---												
FACIL.STANDRD.WKPKG			DESCRIPTION	QUANTITY	MANHOURS	LABOR	EQUIP USAGE	MATERIAL	SUB- CONTRACT	EQUIP- MENT	OH&P	TOTAL DOLLARS
=====												
291			CUT & COVER @ BAY BRIDGE									
291	.00000001.		4 TRACK/3 CELL - 125' LONG ALTERNATE B - 25' STAGES DAMES & MOORE PLATE 6-27a	1 LS	0	0	0	0	0	0	0	0
291	.0214100.		SAV CUT ROAD PAVEMENT	650 LF	78	2578	532	3441	0	0	1588	8139
291	.0214101.		REMOVE ROAD PAVEMENT - 16"THK.	1120 SY	280	10703	1811	0	0	0	5006	17520
291	.0214221.		TRAFFIC MAINTENANCE	125 RF	0	0	0	0	187500	0	9375	196875
291	.0214515.		STREET DECKING W/STEEL GIRDER AND TIMBER	1120 SY	3319	143703	27136	103292	86632	0	82996	443759
291	.0214631.		REMOVE TOP OF SLURRY WALL	225 CY	788	29342	3502	0	0	0	13138	45982
291	.0214632.		REMOVE CONCRETE GUIDE WALLS	500 LF	0	0	0	0	45455	0	2273	47728
291	.0220219.		SLURRY WALL CONSTR W/SOLDIER PILES @ 4', REINF CAGE & TREMIIE CONC METH - IN ROCK	17500 SF	0	0	0	0	2625000	0	131250	2756250
291	.0220241.		HAUL TO DUMP - EXCAV MAT'L	21100 CY	2110	78112	85539	0	62773	0	68599	295023
291	.0220242.		DUMP FEE (CONTAMINATED MATERIAL)	21100 CY	0	0	0	0	253200	0	12660	265860
291	.0221110.		DEWATERING	1 LS	0	0	0	0	119000	0	5950	124950
291	.0238202.		ROCK BOLTS 30' X 1"	550 EA	0	0	0	29838	165000	0	11234	206072
291	.0241011.		OPEN ROCK EXCAV W/O POWDER	11100 CY	24975	0	0	0	1931400	0	96570	2027970
291	.0241012.		MINE & MUCK BELOW SLAB	10000 CY	66700	0	0	0	3480000	0	174000	3654000
291	.0267250.		INSTRUMENTATION	125 RF	0	0	0	0	91000	0	4550	95550
291	.0268001.		SITE DRAINAGE	1 LS	0	0	0	0	24000	0	1200	25200
291	.0310100.		FORMS - GENERAL	15200 SF	3192	143087	3055	14678	0	0	40205	201025
291	.0323309.		REBAR - GENERAL	1272450 LB	25449	1075326	184505	358958	0	0	404697	2023486
291	.0340560.		LEAN CONCRETE FILL	11100 CY	5550	210449	52170	505827	0	0	192112	960558
291	.0343299.		UPPER SLAB ON GRADE	2170 CY	2170	0	0	0	229391	0	11470	240861
291	.0343301.		EMBEDDED METAL - PLATFORM	35000 LB	1400	62517	1155	83621	0	0	36823	184116
291	.0344302.		CONCRETE - LOWER PLATFORM	2170 CY	4340	158526	5143	160103	0	0	80943	404715
291	.0354409.		CONCRETE - LOWER WALLS	650 CY	1950	72979	12029	47957	0	0	33241	166206
291	.0511131.		STRUCTURAL STEEL - STRUTS 2' DIAM. X 1" STEEL PIPE, WHALERS W36 X 300 & MISC	765 TON	3060	131170	23924	332010	0	0	121776	608880
291	.1573251.		FIRE PROTECTION	10000 SF	60	0	0	0	10000	0	500	10500
291	.1634200.		LIGHTING (SUBWAY)	500 LF	0	0	0	0	23800	0	1190	24990
TOTAL CUT & COVER @ BAY BRIDGE				145,421	2,118,492	400,501	1,639,725	9,334,151	1,543,346	0	15,036,215	

REPORT TOTAL				145,421	2,118,492	400,501	1,639,725	9,334,151	1,543,346	0	15,036,215	

CALTRAIN DOWNTOWN EXTENSION SAN FRANCISCO, CALIF.

01/15/96
BY BCC/RLM
65928-005-03

SUMMARY OF DEVELOPED TYPICAL RAIL TERMINAL COSTS

FAC. #	DESCRIPTION	NO. OF TRACKS	RF	TOTAL DOLLARS	COST \$/RF	COMMENTS
300	<u>RAIL TERMINALS</u>					
320	MARKET/BEALE STATION - SIDE PLAT. (SPTC WALL) 2A	4	1080 RF	\$117,070,124	\$108,398	BEALE AND MARKET STACKED
321	MARKET/BEALE STATION - CENTER PLAT. (SPTC WALL) 2A	4	1080 RF	\$115,280,198	\$106,741	BEALE AND MARKET STACKED
322	STAGGERED MARKET/BEALE STATION - CENT PLT. (SOIL CEMENT) 2B	4	1680 RF	\$99,266,160	\$91,913	BEALE AND MARKET STAGGERED
323	MISSION/FOLSOM STATION - CENT PLT. (SOIL CEMENT) 2C	4	1080 RF	\$95,197,273	\$88,146	MISSION FOLSOM TERMINAL
326	TRANSHAY TERMINAL SUBWAY STATION, 4TRK	4	1080 RF	\$83,930,125	\$77,713	TRANSBAY TERMINAL SITE
327	TRANSHAY TERMINAL SUBWAY STATION, 6TRK	6	1080 RF	\$98,319,237	\$91,036	TRANSBAY TERMINAL SITE
328	TRANSHAY TERMINAL SUBWAY STATION, 6TRK, SHELL	6	1080 RF	\$65,239,512	\$60,407	TRANSBAY TERMINAL SITE
331	SUBWAY STATION, MISSION BAY, 2TRK	2	1080 RF	\$49,791,156	\$46,103	TOWNSEND & THIRD STREET
332	SUBWAY STATION, MISSION BAY, 2TRK, SHELL	2	1080 RF	\$34,441,206	\$31,890	TOWNSEND & THIRD STREET

altrain\sumsh2.xls

--- FACIL. STANDARD WORK PACKAGE -----	DESCRIPTION -----	QUANTITY -----	MANHOURS -----	LABOR -----	EQUIP USAGE -----	MATERIAL -----	SUB- CONTRACT -----	EQUIP- MENT -----	OH&P -----	TOTAL DOLLARS -----
320	SUBWAY STATION - BEALE ST. SIDE PLT									
320	1080' SECTION, UTILIZING SPTC SHORING.	0	0	0	0	0	0	0	0	0
320	SAW CUT ROAD PAVEMENT	2160 LF	259	8560	1769	11434	0	0	5275	27038
320	REMOVE ROAD PAVEMENT- 16"THK.	5280 SY	1320	50455	8538	0	0	0	23597	82590
320	SPECIAL TRAFFIC MAINTENANCE	1 LS	0	0	0	0	400000	0	20000	420000
320	OVER STATION AREA.									
320	STREET DECKING W/STEEL GIRDER AND TIMBER	8720 SY	25837	1118668	211277	804202	674492	0	646123	3454762
320	REMOVE TOP OF SLURRY WALL	2050 CY	7175	267165	31904	0	0	0	119628	418697
320	REMOVE CONCRETE GUIDE WALLS	2305 LF	0	0	0	0	209548	0	10477	220025
320	CUT OPENING TO BART, DISPOSE OF MATERIAL, FINISH OPENING	1 LS	1920	0	0	0	100000	0	5000	105000
320	TRANSITION TO BART	1 LS	2770	0	0	0	265000	0	13250	278250
320	SLURRY WALL CONSTRUCTION WITH SOLDIER PILES, REINF. CAGE AND TREMI CONCRETE METHOD	276641 SF	0	0	0	0	26704156	0	1335208	28039364
320	HAUL TO DUMP DEBRIS	238621 CY	0	0	0	0	2386210	0	119311	2505521
320	DUMP FEE (CONTAMINATED MATERIAL)	238621 CY	0	0	0	0	2863452	0	143173	3006625
320	COMPACTED FILL	20186 CY	6096	215668	32984	234568	0	0	122918	606138
320	DEWATERING	1080 RF	0	0	0	0	392731	0	19637	412368
320	EXCAV MASS-2CY CLAMSHELL	228910 CY	29758	1190320	629503	0	0	0	727929	2547752
320	INSTRUMENTATION	1080 RF	0	0	0	0	172800	0	8640	181440
320	FORMS - GENERAL	289110 SF	60713	2721562	58111	279179	0	0	764713	3823565
320	NEOPRENE WATERSTOPS, DP, 6"	10683 LF	961	43078	919	60134	0	0	26033	130164
320	REBAR - GENERAL	16433110 LB	148078	6256913	1069452	4641422	0	0	2991947	14959734
320	CONCRETE - PLATFORM	15750 CY	7875	287648	9340	1093680	0	0	347667	1738335
320	CONCRETE - UPPER SLAB	8982 CY	8982	336151	55410	623710	0	0	253818	1269089
320	CONCRETE - SUPPORTED SLAB AND BEAMS	18146 CY	18146	679114	111943	1260058	0	0	512779	2563894
320	CONCRETE - EXTERIOR WALLS	21643 CY	37875	1417472	233636	1502890	0	0	788500	3942498
320	JET GROUTING 25' THICK SLAB	1 LS	0	0	0	0	8918180	0	445909	9364089
320	STRUCTURAL STEEL - STRUTS 2' DIAM. X 1" STEEL PIPE, WALERS W36 X 300 & MISC ARCHITECTURAL FINISH - SIDE	7942 TON	31768	1361771	248370	3446828	0	0	1264242	6321211
320	PLATFORM STATION	1 LS	0	0	0	0	5329000	0	266450	5595450
320	WATER PROOFING MEMBRANE	226984 SF	11349	372701	7037	322377	0	0	175529	877644
320	CONCRETE STAIRS, NOSING & ETC NOSING & ETC. (BETWEEN PLATFORMS)	16 LS	0	0	0	0	352000	0	17600	369600
320	CONCRETE STAIRS, NOSING & ETC NOSING & ETC. (BETWEEN MEZZANINE & STREET)	6 LS	0	0	0	0	156000	0	7800	163800

---WORK BREAKDOWN---	DESCRIPTION	QUANTITY	MANHOURS	LABOR	EQUIP USAGE	MATERIAL	SUB- CONTRACT	EQUIP- MENT	OH&P	TOTAL DOLLARS
FACIL.STANDRD.WKPKG										
320 .1510050.	DRAINAGE	1 LS	0	0	0	0	222727	0	11136	233863
320 .1571100.	HVAC	1 LS	0	0	0	0	1000000	0	50000	1050000
320 .1571101.	VENTILATION SHAFT, EQUIPMENT & STACK	2 EA	0	0	0	0	4400000	0	220000	4620000
320 .1573200.	FIREPROTECTION	1 LS	0	0	0	0	750000	0	37500	787500
320 .1573201.	WET STANDPIPE	400 TF	0	0	0	0	40000	0	2000	42000
320 .1573202.	WET STANDPIPE DELUGE SYSTEM ADJACENT TO TRACKWAY	400 TF	0	0	0	0	40000	0	2000	42000
320 .1574100.	PLUMBING	1 LS	0	0	0	0	800000	0	40000	840000
320 .1575101.	ELEVATOR - STREET LVL TO MEZ. APPROX. 26' (INC. HOISTWAY)	2 EA	0	0	0	0	300000	0	15000	315000
320 .1575102.	ELEVATOR - MEZZANINE DOWN TO LOWER TRACK LEVEL, APPROX 49' (INCLUDING COST OF HOISTWAY)	6 EA	0	0	0	0	1500000	0	75000	1575000
320 .1575201.	STREET ENTRANCE	6 EA	0	0	0	0	3000000	0	150000	3150000
320 .1575203.	ESCALATORS - REVERSIBLE, 48" WIDE, PLAT. TO PLAT. (PRICE INCLUDES ESC. WAY) -	24 EA	0	0	0	0	3000000	0	150000	3150000
320 .1575204.	ESCALATORS - REVERSIBLE, 48" WIDE, MEZ. TO STREET. (PRICE INCLUDES ESC. WAY) -	6 EA	0	0	0	0	810000	0	40500	850500
320 .1575255.	DUCTWORK & HOODS	1768700 LB	70748	0	0	0	5606779	0	280339	5887118
320 .1634301.	STATION POWER INCLUDING EMERGENCY GENERATOR	1 LS	0	0	0	0	950000	0	47500	997500
320 .1668001.	UPS - SYSTEM (UNINTERRUPTED POWER SYSTEM)	1 LS	0	0	0	0	100000	0	5000	105000
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TOTAL	SUBWAY STATION - BEALE ST. SIDE PLT	471,630	2,710,193	71,443,075	12,309,128					
		16,327,246	14,280,482	0	117,070,124					
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REPORT TOTAL		471,630	2,710,193	71,443,075	12,309,128					
		16,327,246	14,280,482	0	117,070,124					

---WORK BREAKDOWN---	DESCRIPTION	QUANTITY	MANHOURS	LABOR	EQUIP USAGE	MATERIAL	SUB- CONTRACT	EQUIP- MENT	OH&P	TOTAL DOLLARS
FACIL.STANDRD.WPKG										
321	SUBWAY STATION - BEALE ST. CENT PLT									
321	1080' SECTION, UTILIZING	0	0	0	0	0	0	0	0	0
321	SPTC SHORING.									
321	SAW CUT ROAD PAVEMENT	2160 LF	259	8560	1769	11434	0	0	5275	27038
321	REMOVE ROAD PAVEMENT- 16"THK.	5280 SY	1320	50455	8538	0	0	0	23597	82590
321	SPECIAL TRAFFIC MAINTENANCE	1 LS	0	0	0	0	400000	0	20000	420000
321	OVER STATION AREA.									
321	STREET DECKING W/STEEL GIRDER	8920 SY	26430	1144343	216123	822647	689962	0	660949	3534024
321	AND TIMBER									
321	REMOVE TOP OF SLURRY WALL	2052 CY	7182	267426	31935	0	0	0	119744	419105
321	REMOVE CONCRETE GUIDE WALLS	2309 LF	0	0	0	0	209911	0	10496	220407
321	CUT OPENING TO BART,	1 LS	1920	0	0	0	100000	0	5000	105000
321	DISPOSE OF MATERIAL,									
321	FINISH OPENING									
321	TRANSITION TO BART	1 LS	2770	0	0	0	265000	0	13250	278250
321	SLURRY WALL CONSTRUCTION WITH	277039 SF	0	0	0	0	26742575	0	1337129	28079704
321	SOLDIER PILES,REINF. CAGE AND									
321	TREMIE CONCRETE METHOD									
321	HAUL TO DUMP DEBRIS	248569 CY	0	0	0	0	2485690	0	124285	2609975
321	DUMP FEE (CONTAMINATED	248569 CY	0	0	0	0	2982828	0	149141	3131969
321	MATERIAL)									
321	COMPACTED FILL	22299 CY	6734	238239	36437	259122	0	0	135783	669581
321	DEWATERING	1080 RF	0	0	0	0	392731	0	19637	412368
321	EXCAV MASS-2CY CLAMSHELL	240086 CY	31211	1248440	660237	0	0	0	763471	2672148
321	INSTRUMENTATION	1080 RF	0	0	0	0	172800	0	8640	181440
321	FORMS - GENERAL	301000 SF	63210	2833494	60501	290661	0	0	796164	3980820
321	NEOPRENE WATERSTOPS,06, 6"	11012 LF	991	44423	947	61986	0	0	26839	134195
321	REBAR - GENERAL	16124415 LB	145120	6131925	1048087	4548697	0	0	2932177	14660866
321	CONCRETE - PLATFORM	14740 CY	7370	269202	8741	1023546	0	0	325372	1626861
321	CONCRETE - UPPER SLAB	9212 CY	9212	344759	56829	639681	0	0	260317	1301586
321	CONCRETE - SUPPORTED SLAB AND	18401 CY	18401	688657	113516	1277765	0	0	519985	2599923
321	BEAMS									
321	CONCRETE - EXTERIOR WALLS	22640 CY	39620	1482779	244399	1572122	0	0	824825	4124125
321	JET GROUTING 25' THICK SLAB	1 LS	0	0	0	0	8918180	0	445909	9364089
321	STRUCTURAL STEEL - STRUTS	8168 TON	32672	1400522	255438	3544912	0	0	1300218	6501090
321	2' DIAM. X 1" STEEL PIPE,									
321	WALERS W36 X 300 & MISC									
321	ARCHITECTURAL FINISH - CENTER	1 LS	0	0	0	0	5343000	0	267150	5610150
321	PLATFORM STATION									
321	WATER PROOFING MEMBRANE	233096 SF	11655	382750	7226	331058	0	0	180259	901293
321	CONCRETE STAIRS, NOSING & ETC	8 LS	0	0	0	0	176000	0	8800	184800
321	NOSING & ETC. (BETWEEN									
321	PLATFORMS)									
321	CONCRETE STAIRS, NOSING & ETC	6 LS	0	0	0	0	156000	0	7800	163800
321	NOSING & ETC. (BETWEEN									
321	MEZZANINE & STREET)									

---WORK BREAKDOWN---	DESCRIPTION	QUANTITY	MANHOURS	LABOR	EQUIP USAGE	MATERIAL	SUB- CONTRACT	EQUIP- MENT	OH&P	TOTAL DOLLARS
FACIL.STANDRD.WKPKG										
321 .1510050.	DRAINAGE	1 LS	0	0	0	0	222727	0	11136	233863
321 .1571100.	HVAC	1 LS	0	0	0	0	1000000	0	50000	1050000
321 .1571101.	VENTILATION SHAFT, EQUIPMENT & STACK	2 EA	0	0	0	0	4400000	0	220000	4620000
321 .1573200.	FIREPROTECTION	1 LS	0	0	0	0	750000	0	37500	787500
321 .1573201.	WET STANDPIPE	400 TF	0	0	0	0	40000	0	2000	42000
321 .1573202.	WET STANDPIPE DELUGE SYSTEM ADJACENT TO TRACKWAY	400 TF	0	0	0	0	40000	0	2000	42000
321 .1574100.	PLUMBING	1 LS	0	0	0	0	800000	0	40000	840000
321 .1575101.	ELEVATOR - STREET LVL TO MEZ. APPROX. 26' (INC. HOISTWAY)	2 EA	0	0	0	0	300000	0	15000	315000
321 .1575102.	ELEVATOR - MEZANINE DOWN TO LOWER TRACK LEVEL, APPROX 49' (INCLUDING COST OF HOISTWAY)	3 EA	0	0	0	0	750000	0	37500	787500
321 .1575201.	STREET ENTRANCE	6 EA	0	0	0	0	3000000	0	150000	3150000
321 .1575203.	ESCALATORS - REVERSIBLE, 48" WIDE, PLAT. TO PLAT. (PRICE INCLUDES ESC. WAY) -	12 EA	0	0	0	0	1500000	0	75000	1575000
321 .1575204.	ESCALATORS - REVERSIBLE, 48" WIDE, MEZ. TO STREET. (PRICE INCLUDES ESC. WAY) -	6 EA	0	0	0	0	810000	0	40500	850500
321 .1575255.	DUCTWORK & HOODS	1768700 LB	70748	0	0	0	5606779	0	280339	5887118
321 .1634301.	STATION POWER INCLUDING EMERGENCY GENERATOR	1 LS	0	0	0	0	950000	0	47500	997500
321 .1668001.	UPS - SYSTEM (UNINTERRUPTED POWER SYSTEM)	1 LS	0	0	0	0	100000	0	5000	105000
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TOTAL	SUBWAY STATION - BEALE ST. CENT PLT	476,825	2,750,723	69,304,183	12,305,687					
		16,535,974	14,383,631		0					115,280,198
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REPORT TOTAL		476,825	2,750,723	69,304,183	12,305,687					
		16,535,974	14,383,631		0					115,280,198

--- FACIL. STANDARD.WPKG -----	DESCRIPTION -----	QUANTITY -----	MANHOURS -----	LABOR -----	EQUIP USAGE -----	MATERIAL -----	SUB- CONTRACT -----	EQUIP- MENT -----	OH&P -----	TOTAL DOLLARS -----
322	2B - SUBWAY STA - MARKET/BEALE									
322	4 TRACK - STAGGERED PLATFORM	1 EA		0	0	0	0	0	0	0
322	SAW CUT ROAD PAVEMENT	3095 LF	383	12658	2611	16384	0	0	7746	39399
322	REMOVE ROAD & PARKING PAVEMENT	18500 SY	3811	145669	24657	0	0	0	68130	238456
322	TRAFFIC MAINTENANCE (TYP)	1750 RF	9013		0	0	318168	0	15908	334076
322	STREET DECKING W/STEEL GIRDER AND TIMBER	9250 SY	28230	1222278	230842	853081	715488	0	702331	3724020
322	REMOVE CONCRETE GUIDE WALLS	6940 LF	0	0	0	0	630915	0	31546	662461
322	REMOVE TOP OF SOIL CEMENT WALL	3085 CY	0	0	0	0	196329	0	9816	206145
322	CUT OPENING TO BART, DISPOSE OF MATERIAL, FINISH OPENING	1 LS	1978		0	0	100000	0	5000	105000
322	TRANSITION TO BART	1 LS	2853	0	0	0	265000	0	13250	278250
322	3' THICK SOIL CEMENT WALL. WITH SOLDIER PILES INCLUDED (W 24 X 94 H - PILES) > 75'	396400 SF	53078	0	0	0	8720800	0	436040	9156840
322	HAUL TO DUMP - EXCAV MAT'L DUMP FEE (CONTAMINATED MATERIAL)	320045 CY	32965	1220364	1336386	0	952134	0	1070307	4579191
322	COMPACTED FILL	51170 CY	15917	563121	86120	594613	0	0	319158	1563012
322	DEWATERING	1750 RF	0	0	0	636370	0	0	31819	668189
322	EXCAV MASS-2CY CLAMHELL	339170 CY	45415	2086819	832489	0	0	0	1167723	4087031
322	INSTRUMENTATION	1750 RF	0	0	0	0	140000	0	7000	147000
322	FORMS - GENERAL	432900 SF	93636	4197390	89623	418030	0	0	1176261	5881304
322	MEOPRENE WATERSTOPS, DB, 6"	3600 LF	334	14972	319	20264	0	0	8889	44444
322	REBAR - GENERAL	17960925 LB	166498	7035235	1202484	5066777	0	0	3326124	16630620
322	CONCRETE - PLATFORM	32650 CY	16815	614196	19942	2267216	0	0	725339	3626693
322	CONCRETE - SUPPORTED SLAB AND BEAMS	22335 CY	23005	860962	141918	1550942	0	0	638456	3192278
322	CONCRETE - EXTERIOR WALLS	14935 CY	26920	1007481	166060	1037086	0	0	552657	2763284
322	CONCRETE - INTERIOR WALL	490 CY	883	33046	5448	34026	0	0	18130	90650
322	CONCRETE (4000 PSI) - COLUMNS	25 CY	56	2096	346	1736	0	0	1045	5223
322	STRUCTURAL STEEL - STRUTS 2' DIAM. X 1" STEEL PIPE, WHALERS W36 X 300 & MISC, ALLOWANCE - ARCH FINISHES, ESCALATORS & ELEVATORS	7854 TON	32358	1387062	252987	3408636	0	0	1262171	6310856
322	WATER PROOFING MEMBRANE	233096 SF	12004	394211	7443	331058	0	0	183178	915890
322	CONCRETE STAIRS, NOSING & ETC NOSING & ETC. (BETWEEN MEZZANINE & STREET)	6 LS	0	0	0	0	156000	0	7800	163800
322	MEZZANINE & STREET	1 LS	0	0	0	0	222727	0	11136	233863
322	DRAINAGE	1 LS	0	0	0	0	100000	0	50000	1050000
322	HVAC									

---WORK BREAKDOWN---	DESCRIPTION	QUANTITY	MANHOURS	LABOR	EQUIP USAGE	MATERIAL	SUB- CONTRACT	EQUIP- MENT	OH&P	TOTAL DOLLARS
FACIL.STANDRD.WKPKG										
322 .1571101.	VENTILATION SHAFT, EQUIPMENT & STACK	2 EA	0	0	0	0	4400000	0	220000	4620000
322 .1573200.	FIREPROTECTION	1 LS	0	0	0	0	750000	0	37500	787500
322 .1573201.	WET STANDPIPE	400 TF	0	0	0	0	40000	0	2000	42000
322 .1573202.	WET STANDPIPE DELUGE SYSTEM ADJACENT TO TRACKWAY	400 TF	0	0	0	0	40000	0	2000	42000
322 .1574100.	PLUMBING	1 LS	0	0	0	0	800000	0	40000	840000
322 .1575251.	MOVING WALK 48" X 280'	4 EA	4326	0	0	0	2240000	0	112000	2352000
322 .1575255.	DUCTWORK & HOODS	1768700 LB	72870	0	0	0	5606779	0	280339	5887118
322 .1668001.	UPS - SYSTEM (UNINTERRUPTED POWER SYSTEM)	1 LS	0	0	0	0	100000	0	5000	105000
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TOTAL	2B - SUBWAY STA - MARKET/BEALE		643,348	20,797,560	4,399,675	15,599,849	45,071,250	0	13,397,826	99,266,160
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REPORT TOTAL			643,348	20,797,560	4,399,675	15,599,849	45,071,250	0	13,397,826	99,266,160

---WORK BREAKDOWN---	FACIL.STANDRD.WKPKG	DESCRIPTION	QUANTITY	MANHOURS	LABOR	EQUIP USAGE	MATERIAL	SUB- CONTRACT	EQUIP- MENT	OH&P	TOTAL DOLLARS
323		2C - SUBWAY STA - MARKET/BEALE									
323	.0000000.	4 TRACK - CENTER PLATFORM	1 EA	0	0	0	0	0	0	0	0
323	.0214100.	SAW CUT ROAD PAVEMENT	2500 LF	300	9915	2048	13234	0	0	6109	31306
323	.0214105.	REMOVE ROAD & PARKING PAVEMENT	19380 SY	3876	148153	25078	0	0	0	69292	242523
323	.0214220.	TRAFFIC MAINTENANCE (TYP)	1080 RF	5400	0	0	0	196355	0	9818	206173
323	.0214515.	STREET DECKING W/STEEL GIRDER AND TIMBER	9700 SY	28741	1244403	235021	894583	750295	0	718743	3843045
323	.0214632.	REMOVE CONCRETE GUIDE WALLS	4800 LF	0	0	0	0	436368	0	21818	458186
323	.0214634.	REMOVE TOP OF SOIL CEMENT WALL	2135 CY	0	0	0	0	135871	0	6794	142665
323	.0214701.	CUT OPENING TO BART, DISPOSE OF MATERIAL, FINISH OPENING	1 LS	1920	0	0	0	100000	0	5000	105000
323	.0214713.	PEDESTRIAN PASSAGE TO BART	630 LF	87261	2186761	476280	1784066	6839910	0	1585619	12872636
323	.0220228.	3' THICK SOIL CEMENT WALL. WITH SOLDIER PILES INCLUDED (W 24 X 94 H - PILES) > 75'	264000 SF	34320	0	0	0	5808000	0	290400	6098400
323	.0220241.	HAUL TO DUMP - EXCAV MAT'L	276260 CY	27626	1022715	1119958	0	821874	0	898163	3862710
323	.0220242.	DUMP FEE (CONTAMINATED MATERIAL)	276260 CY	0	0	0	0	3315120	0	165756	3480876
323	.0220332.	COMPACTED FILL	38890 CY	11745	415521	63546	451915	0	0	236818	1167800
323	.0221109.	DEWATERING	1080 RF	0	0	0	0	392731	0	19637	412368
323	.0221120.	EXCAV MASS-2CY CLAMSHELL	305560 CY	39723	1825272	728149	0	0	0	1021368	3574789
323	.0267250.	INSTRUMENTATION	1080 RF	0	0	0	0	86400	0	4320	90720
323	.0310100.	FORMS - GENERAL	414525 SF	87050	3902162	83320	400286	0	0	1096442	5482210
323	.0313206.	NEOPRENE WATERSTOPS,DB, 6"	2000 LF	180	8069	172	11258	0	0	4875	24374
323	.0332300.	REBAR - GENERAL	15117675 LB	136059	5749060	982649	4264696	0	0	2749101	13745506
323	.0344301.	CONCRETE - PLATFORM	26430 CY	13215	482700	15673	1835299	0	0	583418	2917090
323	.0344830.	CONCRETE - SUPPORTED SLAB AND BEAMS	22235 CY	22235	832145	137168	1543998	0	0	628328	3141639
323	.0354400.	CONCRETE - EXTERIOR WALLS	9335 CY	16336	611375	100771	648222	0	0	340092	1700460
323	.0354401.	CONCRETE - INTERIOR WALL	1225 CY	2144	80239	13224	85064	0	0	44632	223159
323	.0364103.	CONCRETE (4000 PSI) - COLUMNS	60 CY	131	4903	807	4166	0	0	2469	12345
323	.0511131.	STRUCTURAL STEEL - STRUTS 2' DIAM. X 1" STEEL PIPE, WALERS W36 X 300 & MISC ALLOWANCE - ARCH FINISHES, ESCALATORS & ELEVATORS	6984 TON	27936	1197508	218411	3031056	0	0	1111744	5558719
323	.0515018.	WATER PROOFING MEMBRANE	1 LS	0	0	0	0	1060000	0	530000	11130000
323	.0711020.	CONCRETE STAIRS, NOSING & ETC	233096 SF	11655	382750	7226	331058	0	0	180259	901293
323	.0955351.	NOSING & ETC. (BETWEEN MEZZANINE & STREET)	6 LS	0	0	0	0	156000	0	7800	163800
323	.1510050.	DRAINAGE	1 LS	0	0	0	0	222727	0	11136	233863
323	.1571100.	HVAC	1 LS	0	0	0	0	1000000	0	50000	1050000

--- FACIL.STANDRD.WKPKG =====	DESCRIPTION =====	QUANTITY =====	MANHOURS =====	LABOR =====	EQUIP USAGE =====	MATERIAL =====	SUB- CONTRACT =====	EQUIP- MENT =====	OH&P =====	TOTAL DOLLARS =====
323 .1571101.	VENTILATION SHAFT, EQUIPMENT & STACK	2 EA	0	0	0	0	4400000	0	220000	4620000
323 .1573200.	FIREPROTECTION	1 LS	0	0	0	0	750000	0	37500	787500
323 .1573201.	WET STANDPIPE	400 TF	0	0	0	0	40000	0	2000	42000
323 .1573202.	WET STANDPIPE DELUGE SYSTEM ADJACENT TO TRACKWAY	400 TF	0	0	0	0	40000	0	2000	42000
323 .1574100.	PLUMBING	1 LS	0	0	0	0	800000	0	40000	840000
323 .1575255.	DUCTWORK & HOODS	1768700 LB	70748	0	0	0	5606779	0	280339	5887118
323 .1668001.	UPS - SYSTEM (UNINTERRUPTED POWER SYSTEM)	1 LS	0	0	0	0	100000	0	5000	105000
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TOTAL	2C - SUBWAY STA - MARKET/BEALE		628,601	20,103,651	4,209,501		42,598,430		12,986,790	
						15,298,901		0	0	95,197,273
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REPORT TOTAL			628,601	20,103,651	4,209,501		42,598,430		12,986,790	
						15,298,901		0	0	95,197,273

--- FACIL.STANDRD.WKPKG -----	DESCRIPTION -----	QUANTITY -----	MANHOURS -----	LABOR -----	EQUIP USAGE -----	MATERIAL -----	SUB- CONTRACT -----	EQUIP- MENT -----	OH&P -----	TOTAL DOLLARS -----
326	TRANSBAY TERM'L S'WAY STATION, 4TRK									
326 .00	(No level 7 description found)									
326 .00000002.	SEG 9B, STA 38 - 4 TRACK/CENTER PLATFORM	1 EA	0	0	0	0	0	0	0	0
326 .02	TOTAL (No level 7 description found)		0	0	0	0	0	0	0	0
326 .0214100.	SITEWORK									
326 .0214105.	SAW CUT ROAD PAVEMENT REMOVE ROAD & PARKING PAVEMENT	280 LF 2335 SY	34 467	1124 17850	229 3021	1482 0	0 0	0 0	689 8348	3524 29219
326 .0214220.	TRAFFIC MAINTENANCE (TYP)	1080 RF	5400	0	0	0	196355	0	9818	206173
326 .0214515.	STREET DECKING W/STEEL GIRDER AND TIMBER	2335 SY	6919	299573	56575	215345	180612	0	173024	925129
326 .0214632.	REMOVE CONCRETE GUIDE WALLS	4320 LF	0	0	0	0	392731	0	19637	412368
326 .0214634.	REMOVE TOP OF SOIL CEMENT WALL	2040 CY	0	0	0	0	129826	0	6491	136317
326 .0214701.	CUT OPENING TO BART, DISPOSE OF MATERIAL, FINISH OPENING	1 LS	1920	0	0	0	100000	0	5000	105000
326 .0214713.	PEDESTRIAN PASSAGE TO BART	950 LF	131585	3297520	718200	2690258	10314150	0	2391021	19411149
326 .0220228.	3' THICK SOIL CEMENT WALL. WITH SOLDIER PILES INCLUDED (W 24 X 94 H - PILES) > 75'	162000 SF	21060	0	0	0	3564000	0	178200	3742200
326 .0220241.	HAUL TO DUMP - EXCAV MAT'L	134900 CY	13490	499400	546885	0	401328	0	438580	1886193
326 .0220242.	DUMP FEE (CONTAMINATED MATERIAL)	134900 CY	0	0	0	0	1618800	0	80940	1699740
326 .0220332.	COMPACTED FILL	20400 CY	6161	217967	33334	237055	0	0	124226	612582
326 .0221109.	DEWATERING	1080 RF	0	0	0	0	392731	0	19637	412368
326 .0221120.	EXCAV MASS-2CY CLAMSHELL	134900 CY	17537	805825	321467	0	0	0	450917	1578209
326 .0233813.	14" X 14" PRECAST PILE	57225 LF	12017	0	0	0	1333343	0	66667	1400010
326 .0267250.	INSTRUMENTATION	1080 RF	0	0	0	0	86400	0	4320	90720
326 .0287362.	6" CONC PAVING FOR PEDESTRIANS	82000 SF	4428	0	0	0	337840	0	16892	354732
326 .03	TOTAL SITEWORK		221,018	1,679,711	19,048,116	3,144,140		3,994,407		33,005,633
326 .0310100.	CONCRETE									
326 .0313206.	FORMS - GENERAL	243000 SF	51030	2287505	48843	234653	0	0	642750	3213751
326 .0332300.	NEOPRENE WATERSTOPS,DB, 6"	2000 LF	180	8069	172	11258	0	0	4875	24374
326 .0344302.	REBAR - GENERAL	11605000 LB	104445	4413237	754325	3273771	0	0	2110333	10551666
	CONCRETE - SOG & LOW PLATFORM	26430 CY	15858	579240	18792	1950005	0	0	637009	3185046

---WORK BREAKDOWN--- FACIL.STANDRD.WKPKG =====									
	DESCRIPTION	QUANTITY	MANHOURS	LABOR	EQUIP USAGE	MATERIAL	SUB- CONTRACT	EQUIP- MENT	TOTAL DOLLARS
326 .0344830.	CONCRETE - SUPPORTED SLAB AND BEAMS	12965 CY	12965	485215	79981	900290	0	0	366372 1831858
326 .0354400.	CONCRETE - EXTERIOR WALLS	4890 CY	8558	320283	52788	339562	0	0	178158 890791
326 .0354401.	CONCRETE - INTERIOR WALL	1225 CY	2144	80239	13224	85064	0	0	44632 223159
	TOTAL		195,180	8,173,788	968,125	6,794,603	0	0	3,984,129 19,920,645
326 05	METALS								
326 .0511131.	STRUCTURAL STEEL - STRUTS 2" DIAM. X 1" STEEL PIPE, WHALERS W36 X 300 & MISC	3175 TON	12700	544400	99292	1377950	0	0	505411 2527053
	TOTAL		12,700	544,400	99,292	1,377,950	0	0	505,411 2,527,053
326 .07	THERMAL & MOISTURE PROTECTION								
326 .0711020.	WATER PROOFING MEMBRANE	223560 SF	11178	367086	6930	317514	0	0	172883 864413
	TOTAL		11,178	367,086	6,930	317,514	0	0	172,883 864,413
326 09	FINISHES								
326 .0901002.	ALLOWANCE - ARCH FINISHES, ESCALATORS & ELEVATORS 4 TRACK STATION W/O MEZZ	1 LS	0	0	0	0	7000000	0	350000 7350000
326 .0905000.	CONCOURSE BUILDINGS, SURFACE	80000 SF	40000	0	0	0	5600000	0	280000 5880000
326 .0955352.	CONCRETE STAIRS, NOSING & ETC (BETWEEN PLATFORM & STREET)	4 EA	0	0	0	0	104000	0	5200 109200
	TOTAL		40,000	0	0	0	12,704,000	0	635,200 13,339,200
326 .15	MECHANICAL								
326 .1510050.	DRAINAGE	1 LS	0	0	0	0	222727	0	11136 233863
326 .1571104.	VENTILATION SHAFT, EQUIPMENT & STACK	2 EA	0	0	0	0	4400000	0	220000 4620000
326 .1571112.	STATION HVAC	1 LS	0	0	0	0	700000	0	35000 735000
326 .1573200.	FIREPROTECTION	1 LS	0	0	0	0	500000	0	25000 525000
326 .1573201.	WET STANDPIPE	4320 TF	0	0	0	0	432000	0	21600 453600
326 .1573202.	WET STANDPIPE DELUGE SYSTEM	4320 TF	0	0	0	0	432000	0	21600 453600
326 .1574101.	ADJACENT TO TRACKWAY	1 LS	0	0	0	0	550000	0	27500 577500
326 .1575255.	STATION PLUMBING DUCTWORK & HOODS	1768700 LB	70748	0	0	0	5606779	0	280339 5887118

--WORK BREAKDOWN-- FACIL.STANDRD.WKPKG =====									
DESCRIPTION	QUANTITY	MANHOURS	LABOR	EQUIP USAGE	MATERIAL	SUB- CONTRACT	EQUIP- MENT	OH&P	TOTAL DOLLARS
=====	=====	=====	=====	=====	=====	=====	=====	=====	=====
TOTAL MECHANICAL		70,748	0	0	0	12,843,506	0	642,175	13,485,681
326 16 ELECTRICAL									
326 .1634301. STATION POWER INCLUDING EMERGENCY GENERATOR	1 LS	0	0	0	0	650000	0	32500	682500
326 .1668001. UPS - SYSTEM (UNINTERRUPTED POWER SYSTEM)	1 LS	0	0	0	0	100000	0	5000	105000
TOTAL ELECTRICAL		0	0	0	0	750,000	0	37,500	787,500
TOTAL TRANSBAY TERM'L S'WAY STATION, 4TRK		550,824	14,224,533	2,754,058	45,345,622	11,634,207	0	9,971,705	83,930,125

---WORK BREAKDOWN--- FACIL.STANDRD.WPKPG										TOTAL		
=====										=====		
	DESCRIPTION	QUANTITY	MANHOURS	LABOR	EQUIP USAGE	MATERIAL	SUB- CONTRACT	EQUIP- MENT	OH&P	DOLLARS		
=====										=====		
327	TRANSBAY TERM'L S'WAY STATION, 6TRK											
327 .00	(No level 7 description found)											
327 .00000002.	SEG 9B, STA 3B -	1 EA	0	0	0	0	0	0	0	0	0	0
	6 TRACK/CENTER PLATFORM											
	TOTAL (No level 7 description found)	0	0	0	0	0	0	0	0	0	0	0
327 .02	SITEWORK											
327 .0214100.	SAV CUT ROAD PAVEMENT	1500 LF	180	5949	1229	7941	0	0	3665	18784		
327 .0214105.	REMOVE ROAD & PARKING PAVEMENT	5000 SY	1000	38223	6470	0	0	0	17877	62570		
327 .0214220.	TRAFFIC MAINTENANCE (TYP)	1080 RF	5400	0	0	0	196355	0	9818	206173		
327 .0214515.	STREET DECKING W/STEEL GIRDER AND TIMBER	4000 SY	11852	513158	96916	368900	309400	0	296390	1584764		
327 .0214632.	REMOVE CONCRETE GUIDE WALLS	4320 LF	0	0	0	0	392731	0	19637	412368		
327 .0214634.	REMOVE TOP OF SOIL CEMENT WALL	2040 CY	0	0	0	0	129826	0	6491	136317		
327 .0214701.	CUT OPENING TO BART, DISPOSE OF MATERIAL, FINISH OPENING	1 LS	1920	0	0	0	100000	0	5000	105000		
327 .0214713.	PEDESTRIAN PASSAGE TO BART	950 LF	131585	3297520	718200	2690258	10314150	0	2391021	19411149		
327 .0220228.	3' THICK SOIL CEMENT WALL. WITH SOLDIER PILES INCLUDED (W 24 X 94 H - PILES) > 75'	162000 SF	21060	0	0	0	3564000	0	178200	3742200		
327 .0220241.	HAUL TO DUMP - EXCAV MAT'L	142000 CY	14200	525684	575668	0	422450	0	461663	1985465		
327 .0220242.	DUMP FEE (CONTAMINATED MATERIAL)	142000 CY	0	0	0	0	1704000	0	85200	1789200		
327 .0220332.	COMPACTED FILL	21500 CY	6493	229713	35131	249838	0	0	130921	645603		
327 .0221109.	DEWATERING	1080 RF	0	0	0	0	392731	0	19637	412368		
327 .0221120.	EXCAV MASS-2CY CLAMSHELL	142000 CY	18460	848237	338386	0	0	0	474649	1661272		
327 .0233813.	14" X 14" PRECAST PILE	57225 LF	12017	0	0	0	1333343	0	66667	1400010		
327 .0267250.	INSTRUMENTATION	1080 RF	0	0	0	0	86400	0	4320	90720		
327 .0287362.	6" CONC PAVING FOR PEDESTRIANS	86000 SF	4644	0	0	0	354320	0	17716	372036		
	TOTAL SITEWORK	228,811	1,772,000	5,458,484	19,299,706	3,316,937	4,188,872	0	34,035,999			
327 .03	CONCRETE											
327 .0310100.	FORMS - GENERAL	248000 SF	52080	2334573	49848	239481	0	0	655976	3279878		
327 .0313206.	NEOPRENE WATERSTOPS,DB, 6"	2000 LF	180	8069	172	11258	0	0	4875	24374		
327 .0332300.	REBAR - GENERAL	1210000 LB	108900	4601479	786500	3413410	0	0	2200347	11001736		
327 .0344302.	CONCRETE - SOG & LOW PLATFORM	27900 CY	16740	611456	19837	2058462	0	0	672439	3362194		

---WORK BREAKDOWN--- FACIL.STANDRD.WPKG										TOTAL DOLLARS			
		DESCRIPTION	QUANTITY	MANHOURS	LABOR	EQUIP USAGE	MATERIAL	SUB- CONTRACT	EQUIP- MENT	OH&P			
327	.0344830.	CONCRETE - SUPPORTED SLAB AND BEAMS	13700 CY	13700	512723	84515	951328	0	0	387142	1935708		
327	.0354400.	CONCRETE - EXTERIOR WALLS	4890 CY	8558	320283	52788	339562	0	0	178158	890791		
327	.0364103.	CONCRETE (4000 PSI) - COLUMNS	1000 CY	2180	81587	13448	69440	0	0	41119	205594		
	TOTAL	CONCRETE		202,338	8,470,170	1,007,108	7,082,941	0	0	4,140,056	20,700,275		
327	.05	METALS											
327	.0511131.	STRUCTURAL STEEL - STRUTS 2" DIAM. X 1" STEEL PIPE, WALERS W36 X 300 & MISC	3300 TON	13200	565833	103201	1432200	0	0	525309	2626543		
	TOTAL	METALS		13,200	565,833	103,201	1,432,200	0	0	525,309	2,626,543		
327	.07	THERMAL & MOISTURE PROTECTION											
327	.0711020.	WATER PROOFING MEMBRANE	250000 SF	12500	410500	7750	355066	0	0	193329	966645		
	TOTAL	THERMAL & MOISTURE PROTECTION		12,500	410,500	7,750	355,066	0	0	193,329	966,645		
327	.09	FINISHES											
327	.0901003.	ALLOWANCE - ARCH FINISH, PLAT ESCALATORS & ELEVATORS 6 TRACK STATION, NO MEZZ.	1 LS	0	0	0	0	10000000	0	500000	10500000		
327	.0905000.	CONCOURSE BUILDINGS, SURFACE	120000 SF	60000	0	0	0	8400000	0	420000	8820000		
327	.0955352.	CONCRETE STAIRS, NOSING & ETC (BETWEEN PLATFORM & STREET)	6 EA	0	0	0	0	156000	0	7800	163800		
	TOTAL	FINISHES		60,000	0	0	0	18,556,000	0	927,800	19,483,800		
327	.15	MECHANICAL											
327	.1510050.	DRAINAGE	1 LS	0	0	0	0	233000	0	11650	244650		
327	.1571104.	VENTILATION SHAFT, EQUIPMENT & STACK	2 EA	0	0	0	0	6000000	0	300000	6300000		
327	.1571112.	STATION HVAC	1 LS	0	0	0	0	1000000	0	50000	1050000		
327	.1573200.	FIREPROTECTION	1 LS	0	0	0	0	750000	0	37500	787500		
327	.1573201.	WET STANDPIPE	6480 TF	0	0	0	0	648000	0	32400	680400		
327	.1573202.	WET STANDPIPE DELUGE SYSTEM	6480 TF	0	0	0	0	648000	0	32400	680400		
327	.1574101.	ADJACENT TO TRACKWAY STATION PLUMBING	1 LS	0	0	0	0	800000	0	40000	840000		
327	.1575255.	DUCTWORK & HOODS	2650000 LB	106000	0	0	0	8400500	0	420025	8820525		

---WORK BREAKDOWN---									
FACIL.STANDRD.WKPKG									
		DESCRIPTION	QUANTITY	MANHOURS	LABOR	EQUIP USAGE	MATERIAL	SUB- CONTRACT	EQUIP- MENT
	TOTAL	MECHANICAL		106,000		0	0	18,479,500	0
327	.16	ELECTRICAL						0	0
327	.1634301.	STATION POWER INCLUDING EMERGENCY GENERATOR	1 LS	0	0	0	0	950000	0
327	.1668001.	UPS - SYSTEM (UNINTERRUPTED POWER SYSTEM)	1 LS	0	0	0	0	100000	0
	TOTAL	ELECTRICAL		0	0	0	0	1,050,000	0
	TOTAL	TRANSBAY TERM'L S'WAY STATION, 6TRK		622,849		2,890,059	57,385,206	12,187,144	10,951,841
				14,904,987					0
									98,319,237

---WORK BREAKDOWN---											TOTAL	
FACIL .STANDRD.WKPKG											DOLLARS	
	DESCRIPTION	QUANTITY	MANHOURS	LABOR	EQUIP USAGE	MATERIAL	SUB- CONTRACT	EQUIP- MENT	OH&P			
=====												
328	T'BAY TERM'L S'WAY STA, 6TRK SHELL											
328	(No level 7 description found)											
328	SEG 9B, STA 38 -	1 EA	0	0	0	0	0	0	0	0	0	
	6 TRACK/CENTER PLATFORM											

	TOTAL (No level 7 description found)		0	0	0	0	0	0	0	0	0	

328	SITEWORK											
328	SAW CUT ROAD PAVEMENT	1500 LF	180	5949	1229	7941	0	0	3665	18784		
328	REMOVE ROAD & PARKING PAVEMENT	5000 SY	1000	38223	6470	0	0	0	17877	62570		
328	TRAFFIC MAINTENANCE (TYP)	1080 RF	5400	0	0	0	196355	0	9818	206173		
328	STREET DECKING W/STEEL GIRDER AND TIMBER	4000 SY	11852	513158	96916	368900	309400	0	296390	1584764		
328	REMOVE CONCRETE GUIDE WALLS	4320 LF	0	0	0	0	392731	0	19637	412368		
328	REMOVE TOP OF SOIL CEMENT WALL	2040 CY	0	0	0	0	129826	0	6491	136317		
328	CUT OPENING TO BART, DISPOSE OF MATERIAL, FINISH OPENING	1 LS	1920	0	0	0	100000	0	5000	105000		
328	PEDESTRIAN PASSAGE TO BART	950 LF	131585	3297520	718200	2690258	10314150	0	2391021	19411149		
328	3' THICK SOIL CEMENT WALL WITH SOLDIER PILES INCLUDED (W 24 X 94 H - PILES) > 75'	162000 SF	21060	0	0	0	3564000	0	178200	3742200		
328	HAUL TO DUMP - EXCAV MAT'L	142000 CY	14200	525684	575668	0	422450	0	461663	1985465		
328	DUMP FEE (CONTAMINATED MATERIAL)	142000 CY	0	0	0	0	1704000	0	85200	1789200		
328	COMPACTED FILL	21500 CY	6493	229713	35131	249838	0	0	130921	645603		
328	DEWATERING	1080 RF	0	0	0	0	392731	0	19637	412368		
328	EXCAV MASS-2CY CLAMSHELL	142000 CY	18460	848237	338386	0	0	0	474649	1661272		
328	14" X 14" PRECAST PILE	57225 LF	12017	0	0	0	1333343	0	66667	1400010		
328	INSTRUMENTATION	1080 RF	0	0	0	0	86400	0	4320	90720		
328	6" CONC PAVING FOR PEDESTRIANS	86000 SF	4644	0	0	0	354320	0	17716	372036		

	TOTAL SITEWORK		228,811	1,772,000	3,316,937	19,299,706	4,188,872	0	34,035,999			
328	CONCRETE			5,458,484								

328	FORMS - GENERAL	248000 SF	52080	2334573	49848	239481	0	0	655976	3279878		
328	NEOPRENE WATERSTOPS,DB, 6"	2000 LF	180	8069	172	11258	0	0	4875	24374		
328	REBAR - GENERAL	12100000 LB	108900	4601479	786500	3413410	0	0	2200347	11001736		
328	CONCRETE - SOG & LOW PLATFORM	27900 CY	16740	611456	19837	2058462	0	0	672439	3362194		

---WORK BREAKDOWN---													
FACIL.STANDRD.WKPKG			DESCRIPTION	QUANTITY	MANHOURS	LABOR	EQUIP USAGE	MATERIAL	SUB- CONTRACT	EQUIP- MENT	OH&P	TOTAL DOLLARS	
=====													
328	.0344	830.	CONCRETE - SUPPORTED SLAB AND BEAMS	13700 CY	13700	512723	84515	951328	0	0	387142	1935708	
328	.0354	400.	CONCRETE - EXTERIOR WALLS	4890 CY	8558	320283	52788	339562	0	0	178158	890791	
328	.0364	103.	CONCRETE (4000 PSI) - COLUMNS	1000 CY	2180	81587	13448	69440	0	0	41119	205594	
TOTAL													
328	.05		CONCRETE	202,338		1,007,108		7,082,941	0		4,140,056	20,700,275	
METALS													
328	.0511	1131.	STRUCTURAL STEEL - STRUTS	3300 TON	13200	565833	103201	1432200	0	0	525309	2626543	
328	.07		2" DIAM. X 1" STEEL PIPE, WHALERS W36 X 300 & MISC	13,200		565,833	103,201	1,432,200	0	0	525,309	2,626,543	
THERMAL & MOISTURE PROTECTION													
328	.0711	1020.	WATER PROOFING MEMBRANE	250000 SF	12500	410500	7750	355066	0	0	193329	966645	
THERMAL & MOISTURE PROTECTION													
328	.15		MECHANICAL	12,500		410,500	7,750	355,066	0	0	193,329	966,645	
DRAINAGE													
328	.1510	050.	VENTILATION SHAFT	1 LS	0	0	0	0	233000	0	11650	244650	
328	.1571	1101.	STATION HVAC EMBEDDED	2 EA	0	0	0	0	3900000	0	195000	4095000	
328	.1571	1113.	WET STANDPIPE	3 LS	0	0	0	0	600000	0	30000	630000	
328	.1573	201.	STATION PLUMBING EMBEDDED	6480 TF	0	0	0	0	648000	0	32400	680400	
328	.1574	102.		3 LS	0	0	0	0	600000	0	30000	630000	
TOTAL													
328	.16		MECHANICAL	0		0	0	5,981,000	0		299,050	6,280,050	
ELECTRICAL													
328	.1634	302.	STATION POWER FOR SHELL EMBEDDED AND SERVICE	6 TRK	0	0	0	0	600000	0	30000	630000	
TOTAL													
328	.1634	302.	ELECTRICAL	0		0	0	0	600,000	0	30,000	630,000	
TOTAL													
328	.1634	302.	T'BAY TERM'L S'WAY STA, 6TRK SHELL	456,849		2,890,059		25,880,706			9,376,616	65,239,512	
				14,904,987		12,187,144				0			

---WORK BREAKDOWN--- FACIL.STANDARD.WKPKG										TOTAL DOLLARS			
	DESCRIPTION	QUANTITY	MANHOURS	LABOR	EQUIP USAGE	MATERIAL	SUB- CONTRACT	EQUIP- MENT	OH&P				
331	SUBWAY STATION, MISSION BAY, 2 TRK												
331 .00	(No level 7 description found)												
331 .00000000.	2 TRACK - 2 15X1000 SIDE PLATFORMS, SURF CONCOURS	1 EA	0	0	0	0	0	0	0	0	0	0	0
	TOTAL (No level 7 description found)	0	0	0	0	0	0	0	0	0	0	0	0
331 .02	SITEWORK												
331 .0214100.	SAW CUT ROAD PAVEMENT	2500 LF	300	9915	2048	13234	0	0	0	6109	31306		
331 .0214105.	REMOVE ROAD & PARKING PAVEMENT	9120 SY	1824	69719	11801	0	0	0	0	32608	114128		
331 .0214220.	TRAFFIC MAINTENANCE (TYP)	1080 RF	5400	0	0	0	196355	0	0	9818	206173		
331 .0214515.	STREET DECKING W/STEEL GIRDER AND TIMBER	9100 SY	26963	1167421	220484	839248	703885	0	0	674281	3605319		
331 .0214632.	REMOVE CONCRETE GUIDE WALLS	4800 LF	0	0	0	0	436368	0	0	21818	458186		
331 .0214634.	REMOVE TOP OF SOIL CEMENT WALL	2135 CY	0	0	0	0	135871	0	0	6794	142665		
331 .0220228.	3" THICK SOIL CEMENT WALL. WITH SOLDIER PILES INCLUDED (W 24 X 94 H - PILES) > 75'	140000 SF	18200	0	0	0	3080000	0	0	154000	3234000		
331 .0220241.	HAUL TO DUMP - EXCAV MAT'L	60000 CY	6000	222120	243240	0	178500	0	0	195069	838929		
331 .0220242.	DUMP FEE (CONTAMINATED MATERIAL)	60000 CY	0	0	0	0	720000	0	0	36000	756000		
331 .0220332.	COMPACTED FILL	65000 CY	19630	694481	106210	755323	0	0	0	395809	1951823		
331 .0221109.	DEWATERING	1080 RF	0	0	0	0	392731	0	0	19637	412368		
331 .0221120.	EXCAV MASS-2CY CLAMSHELL	125000 CY	16250	746688	297875	0	0	0	0	417825	1462388		
331 .0267250.	INSTRUMENTATION	1080 RF	0	0	0	0	86400	0	0	4320	90720		
	TOTAL SITEWORK		94,567	881,658	5,930,110	1,607,805				1,974,088			
331 .03	CONCRETE		2,910,344							0	13,304,005		
331 .0305001.	STATION ENTRANCEWAY COMPLETE	4 EA	0	0	0	0	6000000	0	0	300000	6300000		
331 .0310100.	FORMS - GENERAL	190000 SF	39900	1788584	38190	183474	0	0	0	502562	2512810		
331 .0313206.	NEOPRENE WATERSTOPS,DB, 6"	1000 LF	90	4034	86	5629	0	0	0	2437	12186		
331 .0332300.	REBAR - GENERAL	6000000 LB	54000	2281725	390000	1692600	0	0	0	1091081	5455406		
331 .0344302.	CONCRETE - SOG & LOW PLATFORM	13000 CY	7800	284908	9243	959140	0	0	0	313323	1566614		
331 .0344830.	CONCRETE - SUPPORTED SLAB AND BEAMS	9000 CY	9000	336825	55521	624960	0	0	0	254327	1271633		
331 .0354400.	CONCRETE - EXTERIOR WALLS	4800 CY	8400	314370	51816	333312	0	0	0	174875	874373		
331 .0354401.	CONCRETE - INTERIOR WALL	1000 CY	1750	65494	10795	69440	0	0	0	36432	182161		

---WORK BREAKDOWN--- FACIL.STANDRD.WPKG									
	DESCRIPTION	QUANTITY	MANHOURS	LABOR	EQUIP USAGE	MATERIAL	SUB- CONTRACT	EQUIP- MENT	TOTAL DOLLARS
=====									
331 .05	CONCRETE	120,940		5,075,940	555,651	3,868,555	6,000,000	0	2,675,037
	METALS								18,175,183
331 .0511131.	STRUCTURAL STEEL - STRUTS 2' DIAM. X 1" STEEL PIPE, WALERS W36 X 300 & MISC	3500 TON	14000	600126	109456	1519000	0	0	557146
									2785728
331 .07	THERMAL & MOISTURE PROTECTION	14,000		600,126	109,456	1,519,000	0	0	557,146
331 .0711020.	WATER PROOFING MEMBRANE	120000 SF	6000	197040	3720	170432	0	0	92798
									463990
331 .09	THERMAL & MOISTURE PROTECTION	6,000		197,040	3,720	170,432	0	0	92,798
	FINISHES								463,990
331 .0901001.	ALLOWANCE - ARCH FINISH, PLAT ESCALATORS & ELEVATORS	1 LS	0	0	0	0	400000	0	200000
331 .0905001.	2 TRACK STATION, NO MEZZ. CONCOURSE BUILDINGS, SURFACE MULTIPLE ENTRANCES	30000 SF	22500	0	0	0	3150000	0	157500
									3307500
331 .15	FINISHES	22,500		0	0	0	7,150,000	0	357,500
	MECHANICAL								7,507,500
331 .1510050.	DRAINAGE	1 LS	0	0	0	0	110000	0	5500
331 .1571104.	VENTILATION SHAFT, EQUIPMENT & STACK	2 EA	0	0	0	0	2000000	0	100000
331 .1571112.	STATION HVAC	1 LS	0	0	0	0	400000	0	20000
331 .1573200.	FIREPROTECTION	1 LS	0	0	0	0	400000	0	20000
331 .1573201.	WET STANDPIPE	2160 TF	0	0	0	0	216000	0	10800
331 .1573202.	WET STANDPIPE DELUGE SYSTEM	2160 TF	0	0	0	0	216000	0	10800
331 .1574101.	ADJACENT TO TRACKWAY	1 LS	0	0	0	0	400000	0	20000
331 .1575255.	STATION PLUMBING DUCTWORK & HOODS	900000 LB	36000	0	0	0	2853000	0	142650
									2995650
331 .16	MECHANICAL	36,000		0	0	0	6,595,000	0	329,750
	ELECTRICAL								6,924,750
331 .1634301.	STATION POWER INCLUDING EMERGENCY GENERATOR	1 LS	0	0	0	0	500000	0	25000
									525000

--WORK BREAKDOWN-- FACIL.STANDRD.WKPKG =====									
DESCRIPTION	QUANTITY	MANHOURS	LABOR	EQUIP USAGE	MATERIAL	SUB- CONTRACT	EQUIP- MENT	OH&P	TOTAL DOLLARS
=====	=====	=====	=====	=====	=====	=====	=====	=====	=====
331 .1668001. UPS - SYSTEM (UNINTERRUPTED POWER SYSTEM)	1 LS	0	0	0	0	100000	0	5000	105000

TOTAL ELECTRICAL		0	0	0	0	600,000	0	30,000	630,000

TOTAL SUBWAY STATION, MISSION BAY, 2 TRK		294,007	8,783,450	1,550,485	26,275,110	7,165,792	6,016,319	0	49,791,156

---WORK BREAKDOWN---	DESCRIPTION	QUANTITY	MANHOURS	LABOR	EQUIP USAGE	MATERIAL	SUB- CONTRACT	EQUIP- MENT	OH&P	TOTAL DOLLARS
FACIL.STANDARD.WKPKG										
332	S'WAY STA, MISSION BAY, 2 TRK SHELL									
332 .00	(No level 7 description found)									
332 .0000000.	2 TRACK - 2 15X1000 SIDE PLATFORMS, SURF CONCOURS	1 EA	0	0	0	0	0	0	0	0
	TOTAL (No level 7 description found)	0	0	0	0	0	0	0	0	0
332 .02	SITEWORK									
332 .0214100.	SAW CUT ROAD PAVEMENT	2500 LF	300	9915	2048	13234	0	0	6109	31306
332 .0214105.	REMOVE ROAD & PARKING PAVEMENT	9120 SY	1824	69719	11801	0	0	0	32608	114128
332 .0214220.	TRAFFIC MAINTENANCE (TYP)	1080 RF	5400	0	0	0	196355	0	9818	206173
332 .0214515.	STREET DECKING W/STEEL GIRDER AND TIMBER	9100 SY	26963	1167421	220484	839248	703885	0	674281	3605319
332 .0214632.	REMOVE CONCRETE GUIDE WALLS	4800 LF	0	0	0	0	436368	0	21818	458186
332 .0214634.	REMOVE TOP OF SOIL CEMENT WALL	2135 CY	0	0	0	0	135871	0	6794	142665
332 .0220228.	3' THICK SOIL CEMENT WALL. WITH SOLDIER PILES INCLUDED (W 24 X 94 H - PILES) > 75'	140000 SF	18200	0	0	0	3080000	0	154000	3234000
332 .0220241.	HAUL TO DUMP - EXCAV MAT'L	60000 CY	6000	222120	243240	0	178500	0	195069	838929
332 .0220242.	DUMP FEE (CONTAMINATED MATERIAL)	60000 CY	0	0	0	0	720000	0	36000	756000
332 .0220332.	COMPACTED FILL	65000 CY	19630	694481	106210	755323	0	0	395809	1951823
332 .0221109.	DEWATERING	1080 RF	0	0	0	0	392731	0	19637	412368
332 .0221120.	EXCAV MASS-2CY CLAMSHELL	125000 CY	16250	746688	297875	0	0	0	417825	1462388
332 .0267250.	INSTRUMENTATION	1080 RF	0	0	0	0	86400	0	4320	90720
	TOTAL SITEWORK		94,567	2,910,344	881,658	1,607,805	5,930,110	0	1,974,088	13,304,005
332 .03	CONCRETE									
332 .0305011.	STATION ENTRANCEWAY PARTIAL (WITH SHELL CONSTRUCTION)	4 EA	0	0	0	0	3000000	0	150000	3150000
332 .0310100.	FORMS - GENERAL	190000 SF	39900	1788584	38190	183474	0	0	502562	2512810
332 .0313206.	NEOPRENE WATERSTOPS,DB, 6"	1000 LF	90	4034	86	5629	0	0	2437	12186
332 .0332300.	REBAR - GENERAL	600000 LB	54000	2281725	390000	1692600	0	0	1091081	5455406
332 .0344302.	CONCRETE - SOG & LOW PLATFORM	13000 CY	7800	284908	9243	959140	0	0	313323	1566614
332 .0344830.	CONCRETE - SUPPORTED SLAB AND BEAMS	9000 CY	9000	336825	55521	624960	0	0	254327	1271633
332 .0354400.	CONCRETE - EXTERIOR WALLS	4800 CY	8400	314370	51816	333312	0	0	174875	874373
332 .0354401.	CONCRETE - INTERIOR WALL	1000 CY	1750	65494	10795	69440	0	0	36432	182161

--WORK BREAKDOWN---		DESCRIPTION	QUANTITY	MANHOURS	LABOR	EQUIP USAGE	MATERIAL	SUB- CONTRACT	EQUIP- MENT	OH&P	TOTAL DOLLARS
FACIL. STANDRD. WPKPG											
332	.05	TOTAL CONCRETE		120,940	5,075,940	555,651	3,868,555	3,000,000		2,525,037	15,025,183
		METALS								0	
332	.0511131.	STRUCTURAL STEEL - STRUTS 2' DIAM. X 1" STEEL PIPE, WHALERS W36 X 300 & MISC	3500 TON	14000	600126	109456	1519000	0	0	557146	2785728
332	.07	TOTAL METALS		14,000	600,126	109,456	1,519,000	0	0	557,146	2,785,728
		THERMAL & MOISTURE PROTECTION									
332	.0711020.	WATER PROOFING MEMBRANE	120000 SF	6000	197040	3720	170432	0	0	92798	463990
332	.15	TOTAL THERMAL & MOISTURE PROTECTION		6,000	197,040	3,720	170,432	0	0	92,798	463,990
		MECHANICAL									
332	.1510050.	DRAINAGE	1 LS	0	0	0	0	110000	0	5500	115500
332	.1571104.	VENTILATION SHAFT, EQUIPMENT & STACK	2 EA	0	0	0	0	2000000	0	100000	2100000
332	.1571113.	STATION HVAC EMBEDDED	1 LS	0	0	0	0	100000	0	5000	105000
332	.1573201.	WET STANDPIPE	2160 TF	0	0	0	0	216000	0	10800	226800
332	.1574102.	STATION PLUMBING EMBEDDED	1 LS	0	0	0	0	100000	0	5000	105000
		TOTAL MECHANICAL		0	0	0	0	2,526,000	0	126,300	2,652,300
332	.16	ELECTRICAL			0		0				
332	.1634302.	STATION POWER FOR SHELL EMBEDDED AND SERVICE	2 TRK	0	0	0	0	200000	0	10000	210000
		TOTAL ELECTRICAL		0	0	0	0	200,000	0	10,000	210,000
		TOTAL S'WAY STA, MISSION BAY, 2 TRK SHELL		235,507	8,783,450	1,550,485	7,165,792	11,656,110		5,285,369	34,441,206

APPENDIX B

UNIT COST LIBRARY

STANDARD CODE	DESCRIPTION	UNIT OF MEASURE	UNIT COST
0214100	SAW CUT ROAD PAVEMENT	LF	13
0214101	REMOVE ROAD PAVEMENT- 16"THK.	SY	22
0214213	TRAFFIC MAINTENANCE - TYPE 4	LS	6,545
0214220	TRAFFIC MAINTENANCE (TYP)	RF	220
0214515	STREET DECKING W/STEEL GIRDER AND TIMBER	SY	511
0214631	REMOVE TOP OF SLURRY WALL	CY	205
0214632	REMOVE CONCRETE CHANNEL	LF	100
0214633	REMOVE CONCRETE - RETAINING W ALL	CY	175
0214634	REMOVE TOP OF SOIL CEMENT WALL	CY	70
0214700	CONNECT INTO BART STATION	LS	300,000
0220220	SLURRY WALL CONSTRUCTION WITH SOLDIER PILES,REINF.	SF	106
	CAGE AND TREMIE CONCRETE METHOD		
0220227	3' THICK SOIL CEMENT WALL. WITH SOLDIER PILES INCLUDED	SF	20
	(W 24 X 94 H - PILES) < 75'		
0220228	3' THICK SOIL CEMENT WALL. WITH SOLDIER PILES INCLUDED	SF	24
	(W 24 X 94 H - PILES) > 75'		
0220230	SOLDIER PILES & LAGGING	SF	34
0220240	HAUL TO DUMP DEBRIS	CY	24
0220242	DUMP FEE (CONTAMINATED MATERIAL)	CY	13
0220330	COMPACTED BACKFILL	CY	29
0220332	COMPACTED FILL	CY	26
0221109	DEWATERING	RF	110
0221120	EXCAV MASS-2CY CLAMSHELL	CY	11
0221252	AUGERHOLES, VERTICAL, 24"DIA FOR DEPTH UP TO 75'	LF	55
0223112	SITE FILL - IMPORTED	CY	8
0231050	EXCAVATION	CY	18
0232316	PLACE STEEL PILES - H SECTION WF 14 X 82 LB/LF	LF	48
0238201	WIRE MESH AND SHOTCRETE	SF	11
0238202	ROCK BOLTS	EA	385
0240100	GRANULAR FILL	CY	43
0241001	TUNNEL EXCAVATION - ROAD HEADER, TOP AND BENCH	CY	106
0241104	STRUCTURE EXCAVATION	CY	12
0243110	SUBBALLAST	CY	35
0267249	TUNNEL DRAINAGE	FT	110
0267250	INSTRUMENTATION	RF	88
0281212	12" AGGREGATE BASE COURSE	SY	11
0282003	3" A.C. PAVING OVER 6" AGG. BASE (INCL SUBBASE AND FINISH COURSE)	SY	20
0289814	STRIPING - 4" WIDE REFLECTORIZED PAINT	LF	0
0310100	FORMS - GENERAL	SF	16
0313206	NEOPRENE WATERSTOPS,DB, 6"	LF	12
0315800	FORMS - TUNNEL WALLS	SF	18
0332300	REBAR - GENERAL	LB	1
0332302	REBAR - TUNNEL	LB	1
0334300	CONCRETE - SLAB ON GRADE	CY	136
0334301	CONCRETE - WALKWAY	CY	187
0343183	CONCRETE - TUNNEL INVERT PUMPED, 3000 PSI	CY	161
0344301	CONCRETE - PLATFORM	CY	139
0344803	CONCRETE - TUNNEL ROOF PUMPED, 3000 PSI	CY	199
0344820	CONCRETE - ROOF SLAB	CY	188
0344821	CONCRETE - CHAMFER	CY	187
0344830	CONCRETE - SUPPORTED SLAB AND BEAMS	CY	193
0351402	FORMS - RETAINING WALLS	SF	12
0352402	REBAR - RETAINING WALL	LB	1
0354400	CONCRETE - EXTERIOR WALL	CY	188
0354401	CONCRETE - INTERIOR WALL	CY	188

UNIT COST LIBRARY

STANDARD CODE	DESCRIPTION	UNIT OF MEASURE	UNIT COST
0354402	CONCRETE - RETAINING WALL	CY	174
0355100	PATCHING SLURRY WALL INCLUDE CHIPPING AND CLEANING	SF	8
0364100	JET GROUTING 20' THICK SLAB	LS	6,111,600
0511110	STEEL SETS S 6 X 12.5	TON	4,252
0511131	STRUCTURAL STEEL - STRUTS 2' DIAM. X 1" STEEL PIPE, WHALERS W36 X 300 & MISC	TON	796
0515015	ARCHITECTURAL FINISH	LS	6,600,000
0525500	FENCE - ORNAMENTAL	LF	436
0525501	ARCHITECTURAL TREETMENT OF RETAINED CUT WALL.	SF	4
0525502	LANDSCAPING FOR RETAINED CUT	LF	44
0553110	WALL HANDRAIL GALV.	LF	30
0554140	METAL WALKWAY 2.5' WIDE (SUBWAY)	LF	68
0711020	WATER PROOFING MEMBRANE WITH FILTER FABRIC	SF	4
0711030	RIGIDBOARD PROTECTION	SF	2
0955350	CONCRETE STAIRS, NOSING & ETC NOSING & ETC	LS	23,038
1510050	DRAINAGE	LS	269,500
1571100	HVAC	LS	1,100,000
1571101	VENTILATION SHAFT	EA	2,200,000
1573200	FIREPROTECTION	LS	825,000
1573201	WET STANDPIPE AND UNDERCAR DELUGE SYSTEM	TF	30
1574100	PLUMBING	LS	880,000
1575101	ELEVATOR - STREET LVL TO MEZ. APPROX. 26' (INC. HOISTWAY)	EA	140,250
1575102	ELEVATOR - MEZZANINE DOWN TO LOWER TRACK LEVEL, APPROX 49' (INCLUDING COST OF HOISTWAY)	EA	251,856
1575201	STREET ENTRANCE	EA	550,000
1575203	ESCALATORS - REVERSIBLE, 48" WIDE, 20'-6" RISE (PRICE INCLUDES ESC. WAY)	EA	185,625
1634200	LIGHTING (SUBWAY)	LF	52
1634301	STATION POWER INCLUDING EMERGENCY GENERATOR	LS	1,045,000
1634311	PUBLIC TELEPHONE	LS	17,600
1634312	PRIVATE TELEPHONE	LS	33,000
1664001	CCTV W/ 25 PAN & TILT CAM.	LS	39,600
1665001	PUBLIC ADDRESS SYSTEM	LS	39,600
1667001	FIRE ALARM AND ANNUNCIATOR SYSTEM	LS	77,000
1668001	UPS - SYSTEM (UNINTERRUPTED POWER SYSTEM)	LS	110,000

APPENDIX C

SAN FRANCISCO, CALIFORNIA
UNION LABOR RATES

JOB NO. 65928-005-02

MASTER DATABASE- OAKLAND

CRAFT CODE	CRAFT	N O T E	EXP DATE	FRINGE BENEFITS							BASE PLUS FRINGE	BURDEN				TOTAL FRINGES & BURDEN	TOTAL LABOR RATE
				H&W	PEN	VAC	APP	TVL	OTHER	SIT FRINGES		WKMN'S COMP	TAXES	PL/PD	OTHER		
7/14/95																	
CBMKJ	BOILERMAKER - JOURNEYMAN		28.31	10/01/96	3.15	2.75	1.30	0.41	0.00	1.15	8.76	3.10	3.88	1.42		17.16	45.47
CBMKF	BOILERMAKER - FOREMAN		30.31	10/01/96	3.15	2.75	1.30	0.41	0.00	1.15	8.76	3.32	4.14	1.52		17.74	48.05
CBRKH	BRICKLAYER - HELPER	8	15.93	08/01/96	3.00	7.88	2.25	0.05	0.00	0.83	14.01	2.12	2.38	0.80		19.31	35.24
CBRKJ	BRICKLAYER - JOURNEYMAN		22.76	08/01/96	3.00	7.88	2.25	0.05	0.00	0.83	14.01	3.02	3.28	1.14		21.45	44.21
CBRKF	BRICKLAYER - FOREMAN		25.94	08/01/96	3.00	7.88	2.25	0.05	0.00	0.83	14.01	3.44	3.70	1.30		22.45	48.39
CCRPA	CARPENTER - APPRENTICE		18.99	07/01/96	3.91	1.60	1.35	0.27	0	2.67	9.80	4.04	2.87	0.95		17.46	38.45
CCRPJ	CARPENTER - JOURNEYMAN		24.50	07/01/96	3.91	1.60	1.35	0.27	0.00	2.67	9.80	5.21	3.39	1.23		19.63	44.13
CCRPF	CARPENTER - FOREMAN		26.00	07/01/96	3.91	1.60	1.35	0.27	0.00	2.67	9.80	5.53	3.59	1.30		20.22	46.22
CCRPG	CARPENTER - GENERAL FOREMAN		31.20	07/01/96	3.91	1.60	1.35	0.27	0.00	2.67	9.80	6.63	4.27	1.58		22.26	53.46
CDCAJ	DRYWALL CARPENTER - JOURNEYMAN		23.68	08/01/95	3.50	2.52	0.60	0.17	0.00	1.44	8.23	2.80	3.18	1.18		15.19	38.87
CDCAF	DRYWALL CARPENTER - FOREMAN		25.18	08/01/95	3.50	2.52	0.60	0.17	0.00	1.44	8.23	2.78	3.38	1.26		15.63	40.81
CDCAJ	DRYWALL CARPENTER - GENERAL FOREMAN	10	30.22	08/01/95	3.50	2.52	0.60	0.17	0.00	1.44	8.23	3.32	4.04	1.51		17.10	47.32
CELCJ	ELECTRICIAN - JOURNEYMAN		30.43	05/31/96	4.70	6.35	0.00	0.38	0.00	1.31	12.74	2.88	3.99	1.52		20.93	51.38
CELCF	ELECTRICIAN - FOREMAN		34.23	05/31/96	4.70	6.35	0.00	0.38	0.00	1.36	12.79	3.02	4.49	1.71		22.01	56.24
CELCG	ELECTRICIAN - GENERAL FOREMAN		38.03	05/31/96	4.70	6.35	0.00	0.38	0.00	1.48	12.91	3.35	4.99	1.90		23.15	61.18
CFIRA	FIRE SPRINKLER - APPRENTICE		17.00	08/01/95	3.75	5.10	2.00	0.40	0.00	0.20	11.45	1.35	2.49	0.85		16.14	33.14
CFIRJ	FIRE SPRINKLER - JOURNEYMAN		30.09	08/01/95	3.75	5.10	2.00	0.40	0.00	0.20	11.45	2.39	4.21	1.50		19.55	49.84
CFIRF	FIRE SPRINKLER - FOREMAN		31.94	08/01/95	3.75	5.10	2.00	0.40	0.00	0.20	11.45	2.54	4.45	1.60		20.04	51.98
CFIRG	FIRE SPRINKLER - GENERAL FOREMAN	10	32.84	08/01/95	3.75	5.10	2.00	0.40	0.00	0.20	11.45	2.61	4.57	1.84		20.27	53.11
CGLAJ	GLAZIER - JOURNEYMAN		24.85	08/01/96	3.48	4.96	0.00	0.42	0.00	0.14	9.00	4.07	3.26	1.24		17.57	42.42
CGLAF	GLAZIER - FOREMAN		27.83	08/01/96	3.48	4.96	0.00	0.42	0.00	0.14	9.00	4.56	3.65	1.39		18.60	46.43
CINIJ	INSULATOR - JOURNEYMAN		28.32	07/31/95	2.32	3.46	3.00	0.25	0.00	0.07	9.10	5.39	4.11	1.42		20.02	48.34
CINIF	INSULATOR - FOREMAN		29.82	07/31/95	2.32	3.46	3.00	0.25	0.00	0.07	9.10	5.68	4.30	1.49		20.57	50.39
CINIG	INSULATOR - GENERAL FOREMAN		30.82	07/31/95	2.32	3.46	3.00	0.25	0.00	0.07	9.10	5.87	4.43	1.54		20.94	51.76
CIRNJ	IRONWORKER/REBAR - JOURNEYMAN	7	21.83	07/01/96	3.14	5.70	2.86	0.22	0.00	0.12	12.04	2.40	3.24	1.09		18.77	40.60
CIRNF	IRONWORKER/REBAR - FOREMAN	7	23.33	07/01/96	3.14	5.70	2.86	0.22	0.00	0.12	12.04	2.56	3.43	1.17		19.20	42.53
CIRSJ	IRONWORKER/STRUCTURAL - JOURNEYMAN		21.83	07/01/96	3.14	5.70	2.86	0.22	0.00	0.12	12.04	4.06	3.24	1.09		20.43	42.26
CIRSF	IRONWORKER/STRUCTURAL - FOREMAN		23.33	07/01/96	3.14	5.70	2.86	0.22	0.00	0.12	12.04	4.34	3.43	1.17		20.98	44.31
CLBGJ	LABORER - JOURNEYMAN		20.01	08/24/96	2.24	2.16	2.10	0.23	0.00	0.09	6.82	2.11	2.90	1.00		12.83	32.84
CLBGF	LABORER - FOREMAN		21.01	06/24/96	2.24	2.16	2.10	0.23	0.00	0.09	6.82	2.21	3.03	1.05		13.11	34.12
CLBGUJ	LABORER-MINER-JM		23.60	08/24/96	2.24	2.16	2.10	0.23	0.00	0.09	6.82	2.76	3.37	1.18		14.13	37.73
CLBGUF	LABORER-MINER-FM		24.60	08/24/96	2.24	2.16	2.10	0.23	0.00	0.09	6.82	2.87	3.50	1.23		14.42	39.02

SAN FRANCISCO, CALIFORNIA
UNION LABOR RATES

JOB NO. 65928-005-02

MASTER DATABASE- OAKLAND

CRAFT CODE	CRAFT	N O T E	EXP. DATE	FRINGE BENEFITS						BASE PLUS FRINGE	BURDEN			TOTAL FRINGES & BURDEN	TOTAL LABOR RATE
				H&W	PEN	VAC	APP	TVL	OTHER		WKMN'S COMP	TAXES	PJ/PD		
CLBMJ	CEMENT MASON - JOURNEYMAN	10	06/16/95	3.60	2.40	2.88	0.18	0.00	0.50	30.31	2.76	3.10	1.04	16.46	37.21
CLBMF	CEMENT MASON - FOREMAN		06/16/95	3.60	2.40	2.88	0.18	0.00	0.50	31.31	2.89	3.23	1.09	16.77	38.52
CLBMG	CEMENT MASON - GENERAL FOREMAN		06/16/95	3.60	2.40	2.88	0.18	0.00	0.50	33.49	3.18	3.51	1.20	17.45	41.38
CLPLJ	PLASTERER - JOURNEYMAN		06/30/95	3.95	5.00	2.00	0.25	0.00	1.45	34.76	2.43	3.16	1.11	19.35	41.46
CMILJ	MILLWRIGHT - JOURNEYMAN		07/01/96	3.91	1.60	1.35	0.27	0.00	4.19	35.72	2.67	3.38	1.22	18.59	42.99
CMILF	MILLWRIGHT - FOREMAN		07/01/96	3.91	1.60	1.35	0.27	0.00	4.19	37.22	2.84	3.57	1.30	19.03	44.93
CMILG	MILLWRIGHT - GENERAL FOREMAN		07/01/96	3.91	1.60	1.35	0.27	0.00	4.19	38.22	2.95	3.70	1.35	19.32	46.22
COHAJ	OPERATING ENGINEER - HEAVY GROUP 1	-	06/16/96	4.29	3.75	2.70	0.45	0.00	0.60	40.38	5.50	4.10	1.43	22.82	51.41
COHBJ	OPERATING ENGINEER - HEAVY GROUP 2		06/16/96	4.29	3.75	2.70	0.45	0.00	0.60	38.97	5.23	3.92	1.36	22.30	49.48
COHCJ	OPERATING ENGINEER - HEAVY GROUP 3		06/16/96	4.29	3.75	2.70	0.45	0.00	0.60	37.61	4.97	3.74	1.29	21.79	47.61
COHDJ	OPERATING ENGINEER - HEAVY GROUP 4	9	06/16/96	4.29	3.75	2.70	0.45	0.00	0.60	36.37	4.73	3.58	1.23	21.33	45.91
COHEJ	OPERATING ENGINEER - HEAVY GROUP 5		06/16/96	4.29	3.75	2.70	0.45	0.00	0.60	35.14	4.49	3.42	1.17	20.87	44.22
COHFJ	OPERATING ENGINEER - HEAVY GROUP 6		06/16/96	4.29	3.75	2.70	0.45	0.00	0.60	33.91	4.26	3.25	1.11	20.41	42.53
COHFG	OPERATING ENGINEER - HEAVY GROUP 7		06/16/96	4.29	3.75	2.70	0.45	0.00	0.60	32.88	4.05	3.12	1.05	20.01	41.08
COHHJ	OPERATING ENGINEER - HEAVY GROUP 8		06/16/96	4.29	3.75	2.70	0.45	0.00	0.60	31.81	3.85	2.98	1.00	19.62	39.64
COHMF	OPERATING ENGINEER - HEAVY FOREMAN		06/16/96	4.29	3.75	2.70	0.45	0.00	0.60	30.97	5.23	3.92	1.36	22.30	49.48
COHPJ	OPERATING ENGINEER - ASSISTANT		06/16/96	4.29	3.75	2.70	0.45	0.00	0.60	29.75	3.46	2.71	0.90	18.86	36.82
COHOJ	OPERATING ENGINEER - OILER		06/16/96	4.29	3.75	2.70	0.45	0.00	0.60	33.25	4.13	3.17	1.07	20.16	41.62
COHLJ	CRANE OPERATOR GROUP 1/1A-OVER 100TN		06/16/96	4.29	3.75	2.70	0.45	0.00	0.60	41.20	5.66	4.21	1.47	23.13	52.54
COHKJ	CRANE OPERATOR GROUP 2/2A-45 TO 100TN		06/16/96	4.29	3.75	2.70	0.45	0.00	0.60	39.56	5.34	3.99	1.39	22.51	50.28
COHJJ	CRANE OPERATOR GROUP 3/3A-10 TO 45TN		06/16/96	4.29	3.75	2.70	0.45	0.00	0.60	37.97	5.04	3.79	1.31	21.93	48.11
COHIJ	CRANE OPERATOR GROUP 8 FORKLIFT<10TN	10	06/16/96	4.29	3.75	2.70	0.45	0.00	0.60	31.81	3.85	2.98	1.00	19.62	39.64
COHUJ	OPER ENGINEER-TUNNEL-JM		06/16/96	4.29	3.75	2.70	0.45	0.00	0.60	36.68	4.79	3.62	1.24	21.44	46.33
COHUF	OPER ENGINEER-TUNNEL-FM		06/16/96	4.29	3.75	2.70	0.45	0.00	0.60	36.67	5.36	4.01	1.39	22.55	50.43
CPILA	PILE DRIVER - APPRENTICE		06/16/96	3.91	0.00	1.70	0.30	0.00	4.94	23.01	2.34	1.82	0.61	15.62	27.78
CPILJ	PILE DRIVER -JOURNEYMAN(NOT OPERATORS)		06/16/96	3.91	1.60	1.70	0.30	0.00	4.94	35.40	4.42	3.23	1.15	21.25	44.20
CPILF	PILE DRIVER - FOREMAN		06/16/96	3.91	1.60	1.70	0.30	0.00	4.94	37.40	4.80	3.49	1.25	21.99	46.94
CPILG	PILE DRIVER - GENERAL FOREMAN	10	06/16/96	3.91	1.60	1.70	0.30	0.00	4.94	40.28	5.35	3.87	1.39	23.06	50.89
CPIPA	PIPEFITTER - APPRENTICE		07/01/96	5.95	2.94	0.00	0.75	0.00	1.35	30.20	2.11	2.52	0.66	16.58	35.79
CPIPJ	PIPEFITTER - JOURNEYMAN		07/01/96	5.95	2.94	0.00	0.75	0.00	1.35	43.01	3.51	4.20	1.60	20.30	52.32
CPIPF	PIPEFITTER - FOREMAN	8	07/01/96	5.95	2.94	0.00	0.75	0.00	1.35	46.21	3.86	4.62	1.76	21.23	56.45
CPIPG	PIPEFITTER - GENERAL FOREMAN		07/01/96	5.95	2.94	0.00	0.75	0.00	1.35	49.41	4.21	5.04	1.92	22.16	60.58

SAN FRANCISCO, CALIFORNIA
UNION LABOR RATES

JOB NO. 65928-005-02

MASTER DATABASE- OAKLAND

CRAFT CODE	CRAFT	N O T E	EXP. DATE	FRINGE BENEFITS						BASE PLUS FRINGE	BURDEN			TOTAL FRINGES & BURDEN	TOTAL LABOR RATE
				H&W	PEN	VAC	APP	TVL	OTHER	S/T	FRINGES	TAXES	PL/PD	OTHER	
7/14/95	CPLBA	8	07/01/96	5.95	3.37	0.00	0.28	0.00	0.31	9.91	2.11	2.52	0.96		34.71
	CPLBJ		07/01/96	5.95	3.37	0.00	0.28	0.00	0.31	9.91	3.51	4.20	1.60		51.24
	CPLBF		07/01/96	5.95	3.37	0.00	0.28	0.00	0.31	9.91	3.86	4.62	1.76		55.37
	CPLBG		07/01/96	5.95	3.37	0.00	0.28	0.00	0.31	9.91	4.21	5.04	1.92		59.50
	CPNTJ		08/01/95	3.50	2.12	0.60	0.21	0.00	1.50	7.93	3.70	2.94	1.09		37.45
	CPNTF		08/01/95	3.50	2.12	0.60	0.21	0.00	1.50	7.93	4.12	3.26	1.21		40.79
	CPNTG		08/01/95	3.50	2.12	0.60	0.21	0.00	1.50	7.93	4.34	3.43	1.28		42.52
	CPOLJ		08/24/96	3.72	0.60	1.60	0.05	0.00	0.20	6.17	3.36	2.88	1.02		33.83
	CPOLF		08/24/96	3.72	0.60	1.60	0.05	0.00	0.20	6.17	3.61	3.08	1.10		35.86
	CROFJ		08/01/96	3.40	3.00	3.00	0.20	0.00	0.25	9.85	7.98	3.02	1.00		41.90
	CROFF		08/01/96	3.40	3.00	3.00	0.20	0.00	0.25	9.85	8.77	3.28	1.10		45.05
	CSHMA	8	06/30/96	4.13	1.80	1.40	0.46	0.00	2.37	10.16	2.05	2.22	0.78		30.74
	CSHMJ		06/30/96	4.13	4.72	4.55	0.46	0.00	5.27	19.13	3.42	3.99	1.29		53.72
	CSHMF		06/30/96	4.13	4.72	4.55	0.46	0.00	5.27	19.13	3.85	4.42	1.46		58.03
	CSHMG		06/30/96	4.13	4.72	4.55	0.46	0.00	5.27	19.13	4.07	4.63	1.54		60.17
	CTMDJ		06/01/95	4.40	4.02	2.00	0.30	0.00	0.33	11.05	1.79	2.92	1.01		37.02
	CTMDF		06/01/95	4.40	4.02	2.00	0.30	0.00	0.33	11.05	1.82	2.97	1.03		37.52
	CTMFJ		06/01/95	4.40	4.02	2.00	0.30	0.00	0.33	11.05	1.73	2.84	0.98		36.25
	CTMTJ		06/01/95	4.40	4.02	2.00	0.30	0.00	0.33	11.05	1.79	2.92	1.01		37.02
	CTMWJ		06/01/95	4.40	4.02	2.00	0.30	0.00	0.33	11.05	1.76	2.88	1.00		36.84
	CTRKJ		06/24/96	2.24	2.16	2.10	0.23	0.00	0.09	6.82	2.08	2.87	0.99		32.52
	CTRKf		06/24/96	2.24	2.16	2.10	0.23	0.00	0.09	6.82	2.21	3.02	1.05		34.06
	CTSRJ		07/01/96	4.15	0.30	2.95	0.10	0.00	0.30	7.80	1.75	3.56	1.21		38.55
	CTSRf	1	07/01/96	4.15	0.30	2.95	0.10	0.00	0.30	7.80	1.78	3.63	1.24		39.18

SAN FRANCISCO, CALIFORNIA
UNION LABOR RATES

JOB NO. 65928-005-02

MASTER DATABASE- OAKLAND

7/14/95			N O T E				EXP. DATE				H&W		PEN	VAC	APP	TVL	OTHER	FRINGES	ST		BASE PLUS FRINGE		WKMN'S COMP		TAXES		PL/PD	OTHER	TOTAL FRINGES & BURDEN	TOTAL LABOR RATE
CRAFT CODE	CRAFT																													

NOTES:

BECAUSE OF TIME LIMITATIONS UNION LABOR RATES COULD NOT BE OBTAINED FOR ALL CRAFTS. IN THESE INSTANCES RATES WERE ASSUMED, BASED ON AVERAGE HISTORIC COST DIFFERENCES BETWEEN CRAFTS.

- 1 CARPENTER RATES WERE USED
- 2 PIPEFITTER RATES WERE USED
- 3 LABORER RATES WERE USED
- 4 OPERATOR GROUP 3 WAS USED AS AVERAGE OPERATOR RATE
- 5 OPERATOR GROUP 6 WAS USED FOR PILE DRIVER JOURNEYMAN
- 6 OPERATOR GROUP 5 WAS USED FOR PILE DRIVER FOREMAN
- 7 IRONWORKER/STRUCTURAL STEEL WORKER RATES WERE USED
- 8 HELPER/APPRENTICE BASE RATE WAS CALCULATED AS 60.0% OF JOURNEYMAN RATE
- 9 FOREMAN BASE RATE WAS CALCULATED AS 110.0% OF JOURNEYMAN RATE
- 10 GENERAL FOREMAN BASE RATE WAS CALCULATED AS 110.0% OF FOREMAN RATE
- 11 TEAMSTER - DUMP TRUCK RATES WERE USED FOR ALL TEAMSTERS



